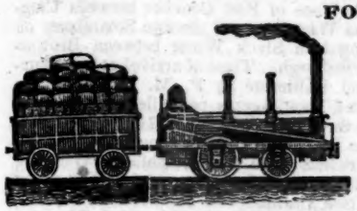
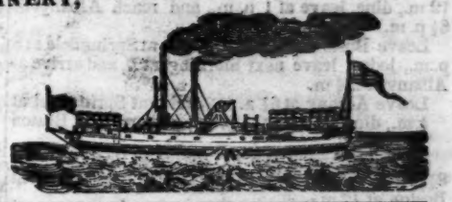
AMERICAN RAILROAD JOURNAL,

AND GENERAL ADVERTISER

FOR RAILROADS, CANALS, STEAMBOATS, MACHINERY, AND MINES.



ESTABLISHED 1831.



PUBLISHED WEEKLY, AT No. 23 CHAMBERS STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM.

SECOND QUARTO SERIES, VOL. II., No. 31.] SATURDAY, AUGUST 1, 1846. [WHOLE No. 528, VOL. XIX.

BOSTON AND PROVIDENCE RAILROAD. Passenger Notice. Summer Arrangement. On and after Monday, April 6, 1846, the Passenger Trains will run as follows:

For New York—Night Line, via Stonington. Leaves Boston every day, but Sunday, at 5 p.m.

Accommodation Trains, leave Boston at 7½ a.m. and 4 p.m., and Providence at 8 a.m. and 4½ p.m.

Dedham trains, leave Boston at 8 a.m. 12½ m., 3½ p.m., and 6½ p.m. Leave Dedham at 7 a.m. and 9½ a.m. and 2½ and 5½ p.m.

Stoughton trains, leave Boston at 11½ a.m. and 5½ p.m. Leave Stoughton at 7·20 a.m. and 3½ p.m.

All baggage at the risk of the owners thereof.

31 1y W. RAYMOND LEE, *Sup't.*

BRANCH RAILROAD and STAGES CONnecting with the Boston and Providence Railroad.

Stages connect with the Accommodation trains at the Foxboro' Station, to and from Woonsocket. At the Seekonk Station, to and from Lonsdale, R. I. via Pawtucket. At the Sharon Station, to and from Walpole, Mass. And at Dedham Village Station, to and from Medford, via Medway, Mass. At Providence, to and from Bristol, via Warren, R. I.—Taunton, New Bedford and Fall River cars run in connection with the accommodation trains.

NORWICH AND WORCESTER RAILROAD. Summer Arrangement, commencing Monday, April 6, 1846.

Accommodation Trains, daily, except Sunday. Leave Norwich, at 6 a.m., and 4½ p.m. Leave Worcester, at 10 a.m., and 4½ p.m.

☞ The morning Accommodation Trains from Norwich, and from Worcester, connect with the trains of the Boston, and Worcester and Western railroads each way.

The Evening Accommodation Train from Worcester connects with the 1½ p.m. train from Boston.

New York Train via Long Island Railroad:

Leave Allyn's Point for Boston, about 1 p.m., daily, except Sunday.

Leave Worcester for New York, about 10 a.m., stopping at Webster, Danielsonville, and Norwich.

New York Train via Steamboat—Leave Norwich for Boston, every morning, except Monday, on the arrival of the stamboat from New York, stopping at Norwich and Danielsonville.

Leave Worcester for New York, upon the arrival of the train from Boston, at about 4½ p.m., daily, except Sunday, stopping at Webster, Danielsonville and Norwich.

Freight Trains daily each way, except Sunday.—Special contracts will be made for cargoes, or large quanties of freight, on application to the superintendent.

☞ *Fares are Less when paid for Tickets than when paid in the Cars.* ☜

32 1y J. W. STOWELL, Sup't.

BOSTON AND MAINE RAILROAD. Upper Route, Boston to Portland via, Reading, Andover, Haverhill, Exeter, Dover, Great Falls, South & North Berwick, Wells, Kennebunk and Saco.

Summer Arrangement, 1846.

On and after April 13, 1846, Passenger Trains will leave daily, (Sundays excepted,) as follows:

Boston for Portland at 7½ a.m. and 2½ p.m.

Boston for Great Falls at 7½ a.m., 2½ and 4½ p.m.

Boston for Haverhill at 7½ and 11½ a.m., 2½, 4½ and 6 p.m.

Boston for Reading at 7½, 9, and 11½ a.m., 2½, 4½, 6 and 8 p.m.

Portland for Boston at 7½ a.m., and 3 p.m.

Great Falls for Boston at 6½ and 9½ a.m., and 4½ p.m.

Haverhill for Boston at 6½, 8½, and 11 a.m., and 4 and 6½ p.m.

Reading for Boston at 6½, 7½ and 9½ a.m., 12 m., 1½, 5 and 7½ p.m.

The Depot in Boston is on Haymarket Square.

Passengers are not allowed to carry Baggage above $50 in value, and that *personal* Baggage, unless notice is given, and an extra amount paid, at the rate of the price of a Ticket for every $500 additional value.

CHAS. MINOT, *Super't.*

TROY AND GREENBUSH RAILROAD. Spring Arrangement. Trains will be run on this Road as follows, until further notice, Sundays excepted.

Leave Troy at	6½	A.M.	Leave Albany at	7	A.M.
"	"	7½	"	"	"	8	"
"	"	8½	"	"	"	9	"
"	"	9½	"	"	"	10	"
"	"	10½	"	"	"	11	"
"	"	11½	"	"	"	12	M.
"	"	1	P.M.	"	"	1½	P.M.
"	"	2	"	"	"	2½	"
"	"	3	"	"	"	3½	"
"	"	4	"	"	"	4½	"
"	"	5	"	"	"	5½	"
"	"	5½	"	"	"	6	"
"	"	6½	"	"	"	7	"

☞ The 6½ a.m. and 2 o'clock p.m. runs from Troy, to Boston runs.

The 12 m. and 6 o'clock p.m. trains from Boston runs.

☞ Passengers from Albany will leave in the Boston Ferry Boat at the foot of Maiden Lane, which starts promptly at the time above advertised.

Passengers will be taken and left at the principal Hotels in River Street, in Troy, and at the Nail Works and Bath Ferry.

L. R. SARGENT, Superintendent.

Troy, April 1st, 1846. 14 1y

SUMMER ARRANGEMENT.—NEW YORK AND ERIE RAILROAD LINE, from April 1st until further notice, will run daily (Sundays excepted) between the city of New York and Middletown Goshen, and intermediate places, as follows:

FOR PASSENGERS—

Leave New York at 7 A.M. and 4 P.M.
" Middletown at 6½ A.M. and 5½ P.M.

FARE REDUCED to $1 25 to Middletown—way in proportion. Breakfast, supper and berths can be had on the steamboat.

FOR FREIGHT—

Leave New York at 5 P.M.
" Middletown at 12 M.

The names of the consignee and of the station where to be left, must be distinctly marked upon each article shipped. Freight not received after 5 P. M. in New York.

Apply to J. F. Clarkson, agent, at office corner of Duane and West sts.

H. C. SEYMOUR, Sup't.

March 25th, 1846.

Stages run daily from Middletown, on the arrival of the afternoon train, to Milford, Carbondale, Honesdale, Montrose, Towanda, Owego, and West; also to Monticello, Windsor, Binghamton, Ithaca, etc., etc. Agent on board. 13 tf

NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.

On and after Friday, May 1st, 1846, the cars will run as follows:

Leave City Hall for Yorkville, Harlem and Morrianna, at 7, 8, 9, 10 and 11 a. m., and at 1, 2, 3 30, 4 30, 5, 6, and 6 30 p. m.

Leave City Hall for Fordham and Williams' Bridge, at 7, 10 and 11 a. m., and at 2, 3 30, 5, and 6 30 p. m.

Leave City Hall for Hunt's Bridge, Bronx, Tuckahoe, Hart's Corners and White Plains, at 7 and 10 a. m., and at 2 and 5 p. m.

Leave Harlem and Yorkville, at 7 10, 8 10, 9, 10, 11 10 a. m., and at 12 40, 2, 3 10, 5 10, 5 30, 6 10, and 7 p. m.

Leave Williams' Bridge and Fordham, at 6 45, 7 45, and 10 45 a. m., and at 12 15, 2 45, 4 45, and 5 45 p. m.

Leave White Plains, at 7 and 10 a. m., and at 2 and 5 p. m.

The freight train will leave the City Hall at 1 o'clock, p. m., and leave White Plains at 1 o'clock in the morning.

On Sundays, the White Plains train will leave the City Hall at 7 a. m. and 5 30 p. m.; will leave White Plains at 7 a. m. and 6 p. m.

On Sundays, the Harlem and Williams' Bridge trains will be regulated according to the state of the weather. 18

BOSTON AND ALBANY.—WESTERN RAILROAD.—Fare Reduced.

1846..Spring Arrangement..1846

Commencing April 1st.

Passenger trains leave daily, Sundays excepted—

Boston 7½ p. m. and 4 p. m. for Albany.
Albany 6½ " and 2½ " for Boston.
Springfield 7 " and 1 " for Albany.
Springfield 7 " and 1½ " for Boston.

Boston, Albany and Troy:

Leave Boston at 7½ a. m., arrive at Springfield at 12 m., dine, leave at 1 p. m., and reach Albany at 6½ p. m.

Leave Boston at 4 p. m., arrive at Springfield at 8 p. m., lodge, leave next morning at 7, and arrive at Albany at 12½ m.

Leave Albany at 6½ a. m., arrive at Springfield at ½ m., dine, leave at 1½ p. m., and arrive at Boston 6½ p. m.

Leave Albany at 2½ p. m., arrive at Springfield at 8½ p. m., lodge, leave next morning at 7, and arrive at Boston at 12 m.

The trains of the Troy and Greenbush railroad connect with all the above trains at Greenbush.

Fare from Boston to Albany, $5; fare from Springfield to Boston or Albany, $2 75.

Merchandize trains run daily (Sundays excepted) between Boston, Albany, Troy, Hudson, Northampton, Hartford, etc.

For further information apply to C. A. Read, agent, 27 State street, Boston, or to S. Witt, agent, Albany.

JAMES BARNES,
Superintent and Engineer.

Western Railroad Office,
Springfield, April 1, 1846. 14 1y

NEW RAILROAD ROUTE FROM BUFFALO to Cincinnati.

Passengers destined for Columbus and Cincinnati, O., Louisville, Ky., St. Louis, Mo., Memphis, Tenn., Vicksburg, Natches, New Orleans, and all intermediate ports, will find a new, and the most expeditious and comfortable Route, by taking Steamboats at Buffalo, landing at Sandusky City, Ohio, distance.....230 miles.

From thence by Cars, over the Mansfield Railroad which is new and just opened [laid with heavy Iron,] to Mansfield, distance..... 56 "

Thence by Stage via Columbus to Xenia over gravel and Macadamized Road, (the best in the state,) in new coaches, distance..... 88 "

Thence, over the Little Miami Railroad, from Xenia to Cincinnati, distance.... 65 "

TIME.

From Buffalo to Sandusky..... 24 hours.
Leave Sandusky 5 a.m. to Columbus.... 14 "
From Columbus to Cincinnati..... 15 "

Or say 30 hours from Sandusky to Cincinnati over this route, including delays.

FARE.

From Buffalo to Sandusky, Cabin.....$6 00
" " " " Steerage..... 3 00
" Sandusky to Columbus..... 4 50
" " *through* to Cincinnati..... 8 00

Passengers should not omit to pay their fare *through* from Sandusky City to Cincinnati and take receipts availing themselves of the benefit of a contract existing between the said Railroad and Stage Co's, securing 121 miles travel by good Railroad and 88 miles by Stage, in crossing from Lake Erie to the Ohio river, in the space of 30 hours.

Passengers destined for St. Louis, or any point below on the Mississippi, will save by taking this route, from 4 to 6 days time and travel, and nearly half the expense, over the Chicago and Peoria route to the above places.

Fare by this route, although the cheapest, will in a short time be reduced, Railroad lengthened, and speed increased.

B. HIGGINS, *Sup't, etc.*
M. & S. C. R. R. Co.
Sandusky City, Ohio.

WILLIAM R. CASEY, Civil Engineer, New York. Address Box 1078, Post-office, New York. 21

THE BEST RAILROAD ROUTE TO THE Lake and Buffalo, from Cincinnati.

Take Cars to Xenia, 65 miles; take Stage to Mansfield, 88 miles; thence by Cars to Sandusky, 56 miles to the Lake; thence Steamboat to Buffalo, 230 miles.

Fare from Cincinnati to Sandusky.....$8 00
" " Sandusky to Buffalo, Cabin..... 6 00
" " " " " Steerage.... 4 50

Fare by this route, although the cheapest across the state, will be reduced in a short time, railroad lengthened, and speed increased.

Leave Cincinnati in the morning, arrive at Columbus at night.

Leave Columbus in the morning, arrive at Sandusky same day.

Leave Sandusky, by Boat, in the morning, arrive at Buffalo next morning in time for the Cars north and east for Niagara Falls, Canada, Saratoga Springs, Troy, Albany, Boston, New York, Washington, or Philadelphia.

Passengers should not omit to pay their fare through from Cincinnati to Sandusky, or from Columbus to Sandusky via Mansfield; as this route is the only one that secures 56 miles [this road is run over in 2h. 50m.,] most railroad which is new, and is the shortest, cheapest and most expeditious across the state.

Fares on the New York railroads are about to be reduced.

B. HIGGINS, *Sup't, etc.*
M. & S. C. R. R. Co.
Saudusky, Ohio.

BALTIMORE AND SUSQUEHANNA Railroad.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger trains run daily, except Sunday, as follows:

Leaves Baltimore at.....9 a.m. and 3½ p.m.
Arrives at.....9 a.m. and 6½ p.m.
Leaves York at.....5 a.m. and 3 p.m.
Arrives at.....12½ p.m. and 8 p.m.
Leaves York for Columbia at..1½ p.m. and 8 a.m.
Leaves Columbia for York at..8 a.m. and 2 p.m.

FARE.

Fare to York.....$1 50
" Wrightsville..... 2 00
" Columbia..... 2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg.....$9
Or via Lancaster by railroad..... 10
Through tickets to Harrisburg or Gettysburg.. 3

In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at.....5¼ p.m.
Returning, leaves Owing's Mills at.....7 a.m.

D. C. H. BORDLEY, *Sup't.*
31 1y Ticket Office, 63 North st.

LEXINGTON AND OHIO RAILROAD. Trains leave Lexington for Frankfort daily, at 5 o'clock a.m., and 2 p.m. Trains leave Frankfort for Lexington daily, at 8 o'clock a.m. and 2 p.m. Distance, 28 miles. Fare $1·25.

On Sunday but one train, 5 o'clock a.m. from Lexington, and 2 o'clock p.m. from Frankfort.

The winter arrangement (after 15th September to 15th March) is 6 o'clock a.m. from Lexington, and ma. 9. from Frankfort, other hours as above.

351y

RAILROAD IRON—1700 TONS VERY Best English Rails, ready to be delivered.—These Rails weigh 60 lbs., the lineal Yard, are 3½ inches deep; 4 inches deep at base; 2½ inches wide at top; 17½ feet long, except one-tenth of 15 and 12½ feet in length.

A first rate Steam Pile Driver built by "*Dunham & Co.*" has never been in use, is in perfect order, and for sale a bargain; also 12 Railway Passenger Cars that have never been used, which will be sold very low.

DAVIS, BROOKS & CO.,
June 1. 30 Wall Street.

BALTIMORE AND OHIO RAILROAD. MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7½ and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry — with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between those points $7, and 4 cents per mile for less distances. Fare through to Wheeling $11 and time about 36 hours, to Pittsburgh $10, and time about 32 hours. Through tickets from Philadelphia to Wheeling $13, to Pittsburgh $12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare $1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13y1

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily.....$26 50
Fare through from Charleston to Huntsville, Decatur and Tuscumbia..... 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

1y25 JOHN KING, Jr, *Agent.*

CENTRAL RAILROAD-FROM SAVANNAH to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers and Freight. Rates of Passage, $8 00. Freight—

On weight goods generally... 50 cts. per hundred.
On measurement goods..... 13 cts. per cubic ft.
On brls. wet (except molasses and oil).....$1 50 per barrel.
On brls. dry (except lime)... 80 cts. per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery..... 40 cts. per hundred.
On hhds. and pipes of liquor, not over 120 gallons.....$5 00 per hhd.
On molasses and oil.....$6 00 per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission.

THOMAS PURSE,
40 Gen'l. Sup't. Transportation.

THE WESTERN AND ATLANTIC Railroad.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur and Tuscumbia, Alabama, and Memphis, Tennessee.

On the same days, the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,
Chief Engineer.
Atlanta, Georgia, April 16th, 1846. 1y1

GEORGIA RAILROAD. FROM AUGUSTA to ATLANTA—171 MILES.
AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO OOTHCALOGA, 80 MILES.


This Road in connection with the South Carolina Railroad and Western and Atlantic Railroad now forms a continuous line, 388 miles in length, from Charleston to Oothcaloga on the Oostenanla River, in Cass Co., Georgia.

Rates of Freight, and Passage from Augusta to Oothcaloga.

On Boxes of Hats, Bonnets, and Furniture per foot.....16 cts.
" Dry goods, shoes, saddlery, drugs, etc., per 100 lbs.....95 "
" Sugar, coffee, iron, hardware, etc.....65 "
" Flour, bacon, mill machinery, grindstones, etc.....33½ "
" Molasses, per hogshead $9·50; salt per bus. 20 "
" Ploughs and cornshellers, each.....75 "

Passengers $10·50; children under 12 years of age half price.

Passengers to Atlanta, head of Ga. Railroad, $7.

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight may be paid at Augusta, Atlanta, or Oothcaloga.

J. EDGAR THOMSON,
Ch. Eng. and Gen. Agent.

Augusta, Oct. 21 1845 *44 1y

LITTLE MIAMI RAILROAD.—1846.— Summer Arrangement.


Two passenger trains daily.

On and after Tuesday, May 5th, until further notice, two passenger trains will be run—leaving Cincinnati daily (Sundays excepted) at 9 a. m. and 1½ p. m. Returning, will leave Xenia at 5 o'clock 50 min. a. m., and 2 o'clock 40 min. p.m.

On Sundays, but one train will be run—leaving Cincinnati at 9, and Xenia at 5 50 min. a. m.

Both trains connect with Neil, Moore & Co.'s daily line of stages to Columbus, Zanesville, Wheeling, Cleveland, Sandusky City and Springfield.

Tickets may be procured at the depot on East Front street.

The company will not be responsible for baggage beyond fifty dollars in value, unless the same is returned to the conductor or agent, and freight paid at the rate of a passage for every $500 in value above that amount.

W. H. CLEMENT,
19 Superintendent.

GREAT SOUTHERN MAIL LINE! VIA Washington city, Richmond, Petersburg, Weldon and Charleston, S. C., direct to New Orleans. The only Line which carries the Great Southern Mail, and Twenty-four Hours in advance of Bay Line, leaving Baltimore same day.

Passengers leaving New York at 4½ P.M., Philadelphia at 10 P.M., and Baltimore at 6½ A.M., proceed without delay at any point, by this line, reaching Richmond in *eleven*, Petersburg in *thirteen and a half hours*, and Charleston, S. C., in *two days* from Baltimore.

Fare from Baltimore to Charleston.....$21 00
" " " Richmond..... 6 60

For Tickets, or further information, apply at the *Southern Ticket Office*, adjoining the *Washington Railroad Office*, Pratt street, Baltimore, to
1y14 STOCTON & FALLS, Agents.

RAILROAD IRON.—THE SUBSCRIBER'S New Rail Iron Mill at Phœnixville, Pa., is expected to be ready to go into operation by the 1st of September, and will be capable of turning out 30 to 40 tons or finished Rails per day. They are now prepared to receive orders to that extent, deliverable after the 1st of Octobet next, for heavy rails of any pattern now in use, equal in quality and finish to best imported.

PIG IRON.—They are also receiving weekly 150 to 200 tons of No. 1 Phœnix Foundry Iron, well adapted for light castings.

REEVES, BUCK & CO,
45 North Water St., Philadelphia,
or by their Agent, ROBT. NICHOLS,
28tf 79 Water St., New York.

RAILROAD SCALES.—THE ATTENTION of Railroad Companies is particularly requested to Ellicotts' Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of **20** years has given a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT.
Factory, 9th street, near Coates, cor. Melon st.
Office, No. 3 North 5th street,
1y25 Philadelphia, Pa.

MARAMEC IRON WORKS FOR SALE. By Authority of a power of Attorney from Messrs. Massey and James, I will sell at Public Auction, at the Court House in the city of St. Louis, on *MONDAY, the 2nd day of November next*, the above named valuable IRON WORKS—together with **8,000** ACRES OF LAND, more or less, on which there are several *valuable and productive Farms* open and in cultivation.

The Maramec Iron Works are situated at the Maramec Big Spring, in Crawford Co., Mo., and consist of **1** BLAST FURNACE; **1** AIR FURNACE; **1** REFINING FORGE, with large Hammer for making Blooms and Anchonies;
2 CHEFFERY FORGES for Drawing Bar Iron;
1 ROLLING MILL for Rolling Blooms into Bars and Plates;
1 SAW AND **1** GRIST MILL,

All within 300 Yards of the head of the spring. There are 2 large frame Coal Houses, and all other Buildings necessary, such as Shops and Houses for the workmen.

This Spring is one of the largest in Missouri, discharging at the lowest time 7,000 cubic feet of water per minute. The Ore Bank from which the Ore has been heretofore taken is about 600 yards from the furnace; it is the *Specular Iron Ore*, the best for making Bar Iron, and the quantity inexhaustible.—It is an Iron Mountain, 400 feet above the level of the Maramec River; the ore is entirely uncovered, and there is an easy descent and a good road from it to the furnace.

The lands have been carefully selected by one of the owners with a view to the interest and convenience of the Works, and are situated principally on the Maramec River and its tributaries, embracing the best bottom lands and water powers. The following detatched tracts, comprized in the above quantity, were selected for the advantages they possess;

183¼ ACRES in T. 40 N. of R. 8 W. in Sec. 3, near Wherry's Mill, in Osage Co.; entered to secure a very valuable Mill power on the Branca Spring and a good landing on the Gasconade River.

80 ACRES on Benton's Creek, 12 miles from the Works; entered to secure an extensive and valuable Ore Bank 2½ miles from the Maramec, at a point where there is ample water power.

320 ACRES in T. 38 N. of R. 4 W. in Sec. 22 and 28, affording an extensive and valuable water power on the Maramec river.

160 ACRES in T. 37 N. of R. 3 W. in Sec. 4, embraces two inexhaustible and valuable Ore Banks and is 1½ miles from Water power sufficient for a furnace and Grist Mill, and is distant 6 miles from the above site on the Maramec.

80 ACRES in T. 37 N. of R. 8 W. in Sec. 33, including an extensive bank of excellent Ore, and distant 1½ miles from water power on the waters of the Gasconade River, in Pulaski Co., sufficient for Furnace and Mills. All those Banks are of the same kind as the one at the Works, and deemed inexhaustible.

1 LOT, containing nearly one Acre, on the South Bank of the Missouri River, 4 Miles above the town of Hermann, purchased for a warehouse and landing, and is one of the best landings on the River.

The lands above described are well timbered, and have been selected with a view to have an ample supply of wood and coal, for fences, building and other purposes. There are on the land valuable quarries of Limestone well adapted for Fluxes for the Ore, and also good quarries of Rock suitable for building. There are also on the land a great number the finest kind of Springs. A large portion of the lands are bottoms well adapted to the production of Corn and other crops. The Works are situated in a very pleasant and healthful part of the country. The Maramec ore is believed to be admirably adapted to the manufacture of steel.

A further description of the property at this time is considered unnecessary, as those wishing to purchase will no doubt view the property, which will be shown by the Agent, residing at the works.

The terms of payment required will be one-third of the purchase money in hand and the balance in three equal annual payments, secured by mortgage on all the property.

A more particular description of the property will be given, and further conditions of the sale made known, on the day of sale.

JNO. F. ARMSTRONG, Agent.
St. Louis, June 6, 1846.

☞ The Louisville, (Ky.,) Journal, Cincinnati Gazette, Tribune (Portsmouth, O.,) Nashville Whig, Pittsburg Gazette, National Intelligencer, United States Gazette, (Phila.) Railroad Journal (N. Y.,) and Boston Atlas, will publish the above once a week until the 20th day of October next, and send bills to this office for settlement, and *mark price on first paper.* 18t25

BALLARD'S NEWLY IMproved Patent Jack Screw.

The advantages of this Jack Screw for Stone quarries, Railroads, Steam Boiler Builders, and other purposes, are superior to any other machine.

The improvemen consists in being able to use either end of the screw, as occasion requires.

It is capable of raising the heaviest Locomotive with ease, being porable, strong and powerful, and not likely to get out of order.

Many Railroad Companies and Boiler makers have them in use, by whom they are highly recommended.

JACK SCREWS of various kinds, sizes, power and price, constantly on hand at the manfactory,
No. 7 Eldridge street
29 near Division.

RAILROAD IRON.—THE "MONTOUR Iron Company," Danville, Pa., is prepared to execute orders for the heavy Rail Bars of any pattern now in use, in this country or in Europe, and equal in every respect in point of quality. Apply to MURDOCK, LEAVITT & CO.,
Agents.
Corner of Cedar and Greenwich Sts. 48 1y

TO RAILROAD COMPANIES AND MANufacturers of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside. THOMAS & EDMUND GEORGE,
ja45 N. E. cor. 12th and Market sts., Philad., Pa.

RICH & CO'S IMPROVED PATENT SALAMANDER SAFES.

Warranted free from dampness, as well as fire and thief proof.

Particular attention is invited to the following certificates, which speak for themselves:

TEST No. 10.

Certificate from Mr. Silas C. Field, of Vicksburgh, Mississippi.

On the morning of the 14th ult., the store owned and occupied by me in this city, was, with its contents, entirely consumed by fire. My stock of goods consisted of oil, rosin, lard, pork, sugar, molasses, liquors, and other articles of a combustible nature, in the midst of which was one of Rich's Improved Patent Salamander Safes, which I purchased last October of Mr. Isaac Bridge, New Orleans, and which contained my books and papers. This safe was red hot, and did not cool sufficiently to be opened until 16 hours after it was taken from the ruins. At the expiration of that time it was unlocked, when its contents proved to be entirely uninjured, and not even discolored. I deem this test sufficient to show that the high reputation enjoyed by Rich's Safes is well merited. S. C. FIELD.

Vicksburgh, Miss., March 9th, 1846.

Certificate from Judge Battaile, of Benton, Mississippi.

In October last I purchased one of Rich's Improved Salamander Safes, which was in the fire at the burning of my law office, and several adjoining buildings in this place, on the 17th of November last, at about half-past one o'clock A. M. of that day. The building was entirely consumed; and I take pleasure in stating that my papers in said safe were preserved without injury. A receipt book which was in said safe, had the glue drawn out of its leather back by the heat, and the back broken; but the leaves of the book, and the writing thereon, were entirely uninjured; and some of the writing which was of blue ink, was also left wholly uneffaced and not in the least faded. Said safe was by the fire heated perfectly red hot, and I do not hesitate to say, that said safe is a perfect security against fire. But the safe tumbled over during the fire, and being heated red hot, the outer sheeting of the door became pressed in, and the bolts of the lock bent, so that it could not be unlocked, and I had to have it broken open. JOHN BATTAILE.

Benton, Miss., December 27,1845.

Still other Tests in the Great Fire of July 19, 1845.

The undersigned purchased of A. S. Martin, No. 138½ Water street, one of Rich's Improved Patent Salamander Safes, which was in our store, No. 54 Exchange place. The store was entirely consumed in the great conflagration on the morning of the 19th inst. The safe was taken from the ruins 52 hours after, and on opening it, the books and papers were found entirely uninjured by fire, and only slightly wet—the leather on some of the books was parched be extreme heat. RICHARDS & CRONKHITE.

New York, 21st July, 1845.

One of Rich's Improved Salamander Safes, which I purchased on the 2d of June last of A. S. Marvin, 138½ Water street, agent for the manufacturer, was exposed to the most intense heat during the late dreadful conflagration. The store which I occupied, No. 46 Broad street, was entirely consumed; the safe fell from the 2d story, about 15 feet, into the cellar, and remained there 14 nours, and when found, I am told, and from its appearance afterwards, should judge that it had been heated to a red heat. On opening it, the books and papers were found not to have been touched by fire. I deem this ordeal sufficient to confirm fully the reputation that Rich's safe has already obtained for preserving its contents against all hazards. (Signed,)

WM. BLOODGOOD.

New York, 21st July, 1845.

The above safes are finished in the neatest manner, and can be made to order at short notice, of any size and pattern, and fitted to contain plate, jewelry, etc. Prices from $50 to $500 each. For sale by

A. S. MARVIN, General Agent,
138½ Water st., N. Y.

Also by Isaac Bridge 76 Magazine street, New Orleans.

Also by Lewis M. Hatch, 120 Meeting street Charleston, S. C. 16 tf

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CUSHMAN'S COMPOUND IRON RAILS. etc. The Subscriber having made important improvements in the construction of rails, mode of guarding against accidents from insecure joints, etc.—respectfully offers to dispose of Company, State Rights, etc., under the privileges of *letters patent* to Railroad Companies, Iron Founders, and others interested in the works to which the same relate. Companies reconstructing their tracks now have an opportunity of *improving* their roads on terms very advantageous to the varied interests connected with their construction and operation; roads having in use flat bar rails are particularly interested, as such are permanently available by the plan.

W. Mc. C. CUSHMAN, *Civil Engineer*,
Albany, N. Y.

Mr. C. also announces that Railroads, and other works pertaining to the profession, may be constructed under his advice or personal supervision. Applicaitons must be post paid.

RAILROAD IRON AND LOCOMOTIVE Tyres imported to order and constantly on hand by A. & G. RALSTON

Mar. 20tf 4 South Front St., Philadelphia.

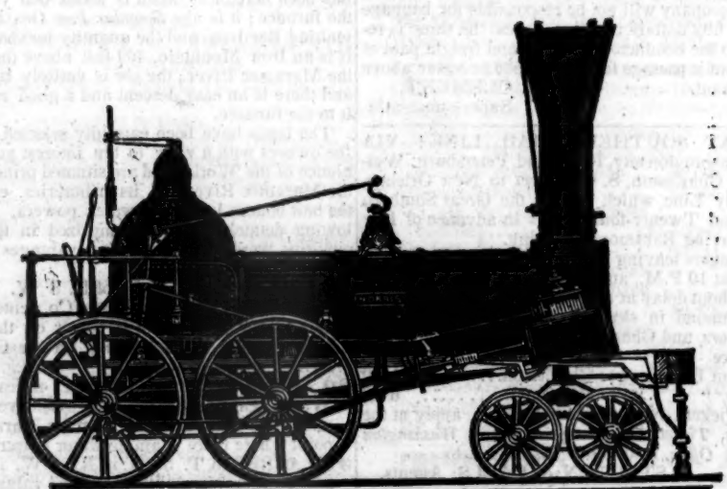
THE NEWCASTLE MANUFACTURING Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention. ANDREW C. GRAY,

a45 President of the Newcastle Manuf. Co.

NORRIS' LOCOMOTIVE WORKS.

BUSH HILL, PHILADELPHIA, Pennsylvania.



MANUFACTURE their Patent 6 Wheel Combined and 8 Wheel Locomotives of the following descriptions, viz:

Class	1,	15	inches	Diameter	of	Cylinder,	× 20	inches Stroke.
"	2,	14	"	"	"		× 24	" "
"	3,	14½	"	"	"		× 20	" "
"	4,	12½	"	"	"		× 20	" "
"	5,	11½	"	"	"		× 20	" "
"	6,	10½	"	"	"		× 18	" "

With Wheels of any dimensions, with their Patent Arrangement for Variable Expansion.

Castings of all kinds made to order: and they call attention to their Chilled Wheels, for the Trucks of Locomotives, Tenders and Cars

NORRIS, BROTHERS

On the Manufacture of Steel.

By Dr. Carl Schafhaeutl.

(*Translated from the Revue Scientifique et Ind. du Dr. Quesneville, for the Lon. Jour. of Arts.*)

Iron, in the composition of which a portion of the silicia is replaced by manganese will while being smelted, rather part with the latter than the former. From this it follows that at the moment when the iron is on the point of passing from a liquid to a solid state, it will retain sufficient silica to form steel.—For this reason, during the whole process of refining, the current of air is caused to act rather upon the surface of the metal than through the interior of the fluid mass, in order to avoid the combustion of too much carbon and silica; from which it follows that the casting becomes malleable without losing a sufficient quantity of silica to constitute iron, properly so called, and the product is raw or blistered steel. The casting which does not contain any manganese, loses by the effect of combustion, a portion of silica proportionable to the quantity of carbon burnt, and furnishes iron only, as a definitive product. It is simply to the mechanical action of the hammer that the distinctive features of steel, as compared with cast metal, are due. In order to effect this change, the blistered steel is broken into pieces and melted down; they are afterwards tempered—again broken into pieces, and welded together at a good welding heat. The steel will be more malleable, and possess more tenacity and uniformity of texture, in proportion to the number of times these operations are repeated. The product is called "wrought or shear steel."

Steel of Cementation and Cast Steel.—When bar iron is heated to a white heat, or even melted in close vessels coniaining coal or carbonaceous substances, it takes up a certain quantity of carbon, and is transformed into castings of various kinds. If the iron contains, together with silica, phosphorus and arsenic in proportions suitable for softening the granular particles of iron during their combination with the carbon, by keeping it for a certain time at a red heat, with powdered charcoal, a casting is obtained, which, when submitted to the action of the hammer, or of rollers, furnishes a product known as "steel of cementation." During this operation, the stratum of oxide which covers the particles of iron inside loses its oxygen, and passes again into a metallic state; but the vacant spaces occasioned by this are filled up, as the ferruginous particles, which are in a semi-fluid state re-assume the chrystalline form. The carbonic oxide gas, in escaping, forms large blisters on the surface of the metal, under which the softened mass crystallizes. On being broken, the interior of these blisters, instead of appearing of a dark colour, indicating the presence of a stratum of protoxide, presents a brilliant and rainbow-tinted appearance, the yellowish and bluish tints distinguishing bronzed steel being observable. If this steel be wrought at a white heat, these blisters will weld in with the mass with the greatest facility. During cementation, the carbon combines with the component particles of the iron in various proportions, depending in a great degree upon the chemical composition of those particles. It is therefore, a vulgar error to suppose that steel of cementation contains more carbon at the surface than in the interor, as stated in all technological treatises. Thus, in the best Dannemora steel, it very frequently happens, when the cementation is finished, that the centre of the metal contains a much greater quantity of carbon than the superficial portions. It may also happen that steel produced from the best Dannemora bar iron will differ in an extraordinary manner as regards hardness, in various portions of the bar; and for this reason, in steel works in England, the bars of steel are always broken into several pieces, in order to class those pieces together which are the most similar in quality.

If ordinary iron be submitted to cementation—that is to say, iron in which the proportion of silica is ordinarily insignificant, when compared with that of carbon—and that independently of this, the iron is deficient in the quantity of phosphorous and arsenic necessary for easily softening the metallic molecules—only carburet of iron and a little siliciuret of iron are produced, but the carbon does not combine with the silica. In this case the steel obtained is deficient in malleability and tenacity—for this reason, that the molecules will not unite or chrystallize until they have taken up a quantity of carbon, more than sufficient to produce steel. With regard to simple carburretted iron (when it contains more carbon,) it either will not harden at all when tempered, or becomes friable and brittle when heated to redness, even when it does not contain more carbon than steel of good quality.

The fracture of the steel of cementation, now under notice, is gray and dull, while steel of good quality is of a silvery aspect, and presents cubical crystals. The best steel can only be obtained by the cementation of forged iron. Whilst the metal is combining with the carbon, the iron must not enter into a complete state of fusion, as in that case groups of crystals, each possessing a different degree of carbonization, would be formed; even the best Dannemora iron will not furnish a uniform product fit for purposes of commerce when melted with substances containing carbon. I am well aware that the experiments of Clouet, Hachette, and Breant, may be opposed to me, as set forth in various treatises upon chemistry; but these are unfortunately mere laboratory experiments, the authors of which have prudently concealed, or passed over in silence, all those which were unsuccessful.—When the operator has obtained a regulus at the bottom of his crucible, and when, after immense trouble, he has succeeded in extracting from it a small portion of steel capable of being worked, he immediately hastens to publish his pretended discovery in some journal, of which others become faithful and credulous echoes; thus, since the manufacture of steel has become the subject of chemical inquiry, complaints are daily becoming more frequent upon the difficulty of procuring steel capable of resisting the treatment to which it is subjected in the arts. If the persons who preside over the coining department either at London or Munich, were consulted, they would all agree in saying, that it is now very difficult to meet with the quality of steel necessary for making the dies. Even in England good steel becomes more and more scarce. With regard to the manufactories of cemented or cast-steel established upon the continent they furnish products, the quality of which is so uncertain, that the workman is often reduced, after having lost his time and trouble, to throw certain portions away, as they want the necessary uniformity and tenacity.

All the artificial alloys of steel with silver of which so much has been said, are not fit for anything, and are never met with in commerce. When the steel has been withdrawn from the cementing furnace, and after it has been broken, and the pieces drawn out they are submitted to one of the two following operations: The pieces after being sorted are piled upon the other and welded together (this is called faggoting the steel;) or the sorted pieces are placed in clay crucibles of a nearly cylindrical form, and cast in a reverberatory furnace, in which two crucibles are placed, one behind the other, upon cakes of fire clay; the orifice of these crucibles is closed by a flat cake of fire clay. The bars of cemented steel, as above mentioned, are divided into pieces of one or two inches in length; these pieces are distributed, according to their degree of carbonization, in vessels fixed to the walls of the place in which the melting is carried on.

These different qualities of steel are generally combined in such a manner as to obtain a product the best suited for the purposes to which cast steel is ordinarily applied. In all treatises on practical chemistry it is asserted, that in order to melt steel, it is to be covered with a layer of glass or blast furnace slag; that the opening of the crucible is luted, or at least becomes firmly fixed during the operation; these assertions are however, erroneous. In the first steel manufactories in Sheffield, steel only is put into the crucibles. With regard to the cover, it is evident that it must not adhere to the crucible, as it is necessary the operator should remove it from time to time with a bar of iron, in order to ascertain the state of the metal.

In order to obtain steel of the best quality, it is not sufficient that the melted mass be run into moulds; the most essential point is to make the casting at the proper time, and for this purpose the operator must be guided by the quality of the steel. This is the duty of the workman, who from long practice can tell the suitable point of fusion, either by simple inspection, or by means of his bar of iron, with which he merely touches the surface of the metal, being most careful not to plunge it into the melted mass. As the quality and uniformity of the steel depend in a great measure upon the experience and judgment of the workman who directs the casting, it follows, that even in England, a good caster is much sought after and well paid. It is not difficult, therefore, to explain why so many of the attempts made to establish man

ufactories of cast steel in Germany have failed, and will again fail. Thanks to the errors propogated by technical works, and by the assertions of superficially informed travellers who had frequently been purposely deceived, it was imagined that in order to obtain English steel of good quality, it was only necessary to melt cemented steel in a crucible, and afterwards pour it into moulds, when in a state of fusion.

As soon as a crucible is emptied, it is replaced in the oven; each crucible serves for one day's work—*i. e.*, four or five castings—after which it is thrown aside. For ordinary purposes, the steel is run into cast iron moulds of a prismatic form, previously heated and closed. When the steel is required for making saw blades, plates, etc., it is run into large moulds of a parallelopiped form. Steel which is very hard, and highly carbonized, contracts considerably in the moulds; great skill is therefore, required to run it into the moulds in such a manner that no vacuum may be produced. In that part of the prism corresponding to the jet, a funnel shaped aperture, from one to two inches deep is formed; this is detached and melted down with other pieces of steel. The transverse fracture of a prism of hard steel is silvery, and has a number of rays radiating from the centre; steel less hard in on the contrary of a uniform granular and crystalline texture. This steel possesses all the brittleness of cast metal. By fusion, steel of cementation acquires peculiar properties, and does not sweat so much as before casting. When steel is produced from iron of bad quality, and carburets of a different nature are produced during cementation the melting, instead of improving it, renders it much worse; as, in that case, the different carburets of iron, which are of inferior quality, separate still more during cooling, This has given rise to an old saying, well known among English founders, that "when the devil is put into the crucible, nothing but the devil will come out."

It is to the existence of these heterogeneous metallic carburets, which are produced during cementation in iron of inferior quality, and which form new combinations during the fusion of the metal, that the complaints of workmen working in steel are to be attributed. In fact, these carburets being only, so to speak, agglutinated, even in bars of forged steel, each of them, at the moment of tempering, is contracted or dilated more or less than the one immediately adjoining it—so that from that time a separation commences between the unequally carbonized layers; in other words, a flaw or crack is produced, which may be distinguished by a peculiar noise at the moment when the steel is plunged in the water, or at least, there is a tendency to separation, which only requires the cooperation of an exterior cause, such as a shock to effect it. This is often observed in razors, etc. The transverse fracture of cast steel ought to present a perfectly homogeneous surface, when the bar is broken by a sharp blow, after being cut or marked with a chisel. The slight inequalities which are perceptible ought to be undulating, and to blend insensibly at their bases with the rest of the metallic surface. When, on the contrary, they stand out perpendicularly, the conclusion may be arrived at, that this portion of the bar was the point of contact of two unequally carbonized layers, which, by separating either at the moment of tempering, or at a later period, had inevitably given rise to this rupture. *Mining Journal.*

The receipts of railroads are ever increasing. Take for instance the Western—the increase for the first six months of 1846, compared with 1845, gives no less than $71,000. The road from Detroit, called the Central Michigan, gave for June this year, an increase over June 1845, of $14,769. We doubt there being an instance which can be cited of a diminution in any road, It has generally turned out that the most sanguine in estimations to encourage the building of a road, did not come up to the realization by nearly 100 per cent.

The Gauge Question.

We find the annexed statement on this subject in the Chronicle of 2d May. It shows the comparative length of the different gauges in Great Britain:

Return of Railways in Great Britain, furnished by the Board of Trade, July 1845.

Number ot miles of railway completed in the United Kingdom	2,264
Of which on the wide gauge of 7 feet—	
Great Western	118½
Cheltenham Branch	42
Oxford Branch	10
Bristol and Exeter	76
Bristol and Gloucester	27½—274
On the gauge of 6 feet 2 inches, but intended to be altered to 5 feet 3 inches—	
Ulster	25
On the gauge of 5 feet 6 inches, but intended to be altered to 4 feet 8½ inches—	
Arbroath and Forfar	15½
Dundee and Arbroath	16½— 32
On the guage of 5 feet 3 inches—	
Dublin and Drogheda	32
On the gauge of 4 feet 8½ inches	1,901
Number of miles of railway sanctioned in 1844	787½
Of which on the 7 feet gauge—	
South Devon	63
On the 5 feet 3 inches gauge (Ireland)—	
Great Southern and Western	122½
On the 4 feet 8½ inches gauge	602½
Total made or sanctioned on the 7 feet gauge	366½
Ditto ditto on the 4 feet 8½ inches gauge	2,503½
Number of miles of projects for which plans and sections were deposited at the Board of Trade for 1845	8,000
Of which on the wide gauge of 7 feet—	658
Number of miles of railway comprised in bills which have passed the house of commons, and seem likely to be sanctioned by parliament this session, about	2,840
Of which in Ireland on the 5 feet 3 inches gauge	472
On the 7 feet gauge—	
Bristol and Exeter, branches	29
Cornwall	66
Exeter and Crediton	5½
South Wales	211
Wilts and Somerset	129
	440½
Exclusive of the	
Oxford and Rugby	50½
Oxford, Worcester and Wolverhampton	97½
	588½
Or inclusive of the Oxford and Rugby, etc.	588½
On the 4 feet 8½ inches gauge	1,628
Grand total of railways made, sanctioned, or likely to be sanctioned, up to present time, July, 1845—	
On the narrow gauge of 4 feet 8½ inches	4,131½
On the wide gauge of 7 feet	777½

Accidents on Railways.

The following "abstract from the Reports of the Board of Trade," will be read with interest. It shows conclusively that the loss of life on railroads, in comparison with steamboat travelling, or even by stage coach, is very trifling when the number of passengers is taken into the account:

Statement of Accidents, abstracted from the Reports of the Railway Department of the Board of Trade, in which the Engine and Carriages, or some part of the train, have run off the line, without any known obstruction, from September 1840, to March 1845:

Date of Accident.	Name of Railway.	Breadth of Gauge.	Deaths and Injuries. Killed.	Deaths and Injuries. Injur'd.	Nature and Cause of the Accident.
Oct. 19, 1840	East'n Counties	ft. in. 5 0	4	6	Excessive speed.
Nov. 8, 1840	Midland do.	4 8½	..	8	Ditto.
Sept. 7, 1841	Great Western.	7 0	1	..	1 engine out of 2 off the line.
Oct. 2, 1841	London and Brighton	4 8½	4	2	Bad road and excessive speed.
Nov. 15, 1843	South-Eastern.	4 8½	..	..	Cause not known
Oct. 31, 1844	Newcastle and Carlisle.	4 8½	..	1	Excessive speed.

Similar Accidents which have occurred since the last Report of the Board of Trade, from March 1845, to January 1, 1846:

Date of Accident.	Name of Railway.	Breadth of Gauge.	Deaths and Injuries. Killed.	Deaths and Injuries. Injur'd.	Nature and Cause of the Accident.
June 16, 1845	Great Western.	ft. in 7 0	sevr'l		Express train—carriages only off the line.
June 1845	Great Western.	7 0	..	..	Ditto, a similar accident, not reported.
Aug. 4, 1845	Northern and Eastern	4 8½	3		Cause not ascertained.
Aug. 19, 1845	Northern and Eastern.	4 8½	..	2	Supposed cause defective joint. Less speed recommended.
Aug. 18, 1845	Manchester and Leeds	4 8½	..	sevr'l	Express train thrown over an embankment.
Dec. 1845	Norfolk	4 8½	2	2	Experimental train; speed 48 miles.
Jan. 1, 1845	York and Darlington	4 8½			

Speed on the English Railways.

The following table shows the speed of express trains on the following lines, as deduced from their respective time tables:

Name of Railway.	Station.	Dist.	Time.	Rate per hour.
GREAT WESTERN.	*Broad Gauge.*	Mil's	h. m.	Miles.
Paddington.....to	Didcot.....	53	1 7	47·5 no stoppage.
Didcot.....to	Swindon....	24	0 35	41·1 1 stoppage.
Swindon.....to	Bath..... ..	29·75	0 37	48·2 no stoppage.
Bath..... .....to	Bristol.....	11·5	0 20	34·5 1 stoppage.
Bristol.....to	Taunton....	44·75	0 58	46·3 no stoppage.
Taunton.....to	Exeter....	30·75	0 47	39·2 1 stoppage.
Return.				
Exeter.....to	Taunton....	30·75	0 43	42 9 no stoppage.
Taunton.....to	Bristol....	44·75	0 57	47·1 1 stoppage.
Bristol.....to	Bath	11·5	0 15	46 no stoppage.
Bath.... .....to	Swindon....	29·75	0 48	37·2 1 stoppage.
Swindon.....to	Didcot.....	24	0 31	46·5 no stoppage.
Didcot.....to	London.....	53	1 10	45·4 1 stoppage.

The speeds as deduced from the engine driver's time table, are as below, exclusive of stoppages:

		Miles per hour.		Miles per hour.
Paddington.....to	Didcot....	46·7	Ret'n	45·4 no stoppage.
Didcot..... ..to	Swindon....	45·	do.	46·4 do.
Swindon.... ....to	Bath.....	46·1	do.	42·8 do.
Bath.... .....to	Bristol....	38·8	do.	38·8 do.
Bristol.... .....to	Taunton....	48·2	do.	45·6 do.
Taunton.... ....to	Exeter....	39·5	do.	45·3 do.

Name of Railway.	Stations.	Dist.	Time.	Rate per hour.
Didcot..... .....to	Oxford.....	10	0 15	40 1 stoppage.
Oxford.....to	Didcot....	..	..	Leaving time for up trains
Swindon. ....to	Gloucester.....	37	1 10	31·7 2 stoppages.
Gloucester.....to	Swindon.....	..	..	Leaving time for up trains
BRISTOL AND BIRMINGHAM.	*Broad Gauge to*	*Glou*	*cester.*	
Bristol.....to	Gloucester.....	37½	1 5	34·6 no stoppages.
Gloucester.....to	Bristol	37½	1 5	34·6 do.
SOUTH-WESTERN.	*Narrow Gauge.*			
London.....to	Basingstoke.... .	46	1 8	40·6 no stoppage.
Basingstoke.....to	Southampton	32	0 52	37 2 stoppages.
Basingstoke.....to	Gosport....	42	1 12	35 do.
Return.				
Gosport.... .....to	Basingstoke	42	1 15	33·6 1 stoppage.
Southampton.....to	Basingstoke	32	0 50	31·4 do.
Basingstoke.... ..to	London	46	1 10	39·4 do.
NORTHERN AND EASTERN.	*Narrow Gauge.*			
London.... .....to	Broxbourne.....	19	0 26	43·8 no stoppage.
London.... .....to	Bishops Stortford.	32½	0 45	43 1 stoppage.
Return.				
Bishops Stortford..to	London	32½	0 55	37 2 stoppages.
Broxbourne.....to	London	19	0 36	33·6 1 stoppage.
LONDON AND BIRMINGHAM.	*Narrow Gauge.*			
London.... .....to	Tring.....	31½	0 48	39·6
Tring.....to	Wolverton.... ..	20½	0 40	30·75 1 stoppage.
Wolverton.....to	Coventry	41½	0 57	43·7 do.
Coventry.... .....to	Birmingham.....	18½	0 35	34·4 do.
Return.				
Birmingham.....to	Coventry.....	18½	0 30	37 no stoppage.
Coventry .....to	Wolverton	41½	1 10	35·6 1 stoppage.
Wolverton.....to	Tring.....	20½	0 40	30·75 do.
Tring.....to	London.....	18½	0 50	37·4 do.
GRAND JUNCTION.	*Narrow Gauge.*			
Birmingham.....to	Stafford....	29½	0 50	35·1 no stoppage.
Stafford.....to	Crewe....	24½	0 45	23 1 stoppage.
Crewe.....to	Warrington	24	0 39	36·9 do.
Return.				
Warrington..... ..to	Crewe....	24	0 44	32·7 1 stoppage.
Crewe.....to	Stafford...	24½	0 48	30·4 do.
Stafford.....to	Birmingham.....	29½	0 56	31·3 do.
LONDON AND BRIGHTON.	*Narrow Gauge.*			
London.... .....to	Reigate....	21	0 45	28 no stoppage.
Reigate.... .....to	Brighton....	29½	0 45	39·3 1 stoppage.
Return.				
Brighton.... .....to	Reigate.....	29½	0 45	39·3 no stoppage.
Reigate.... .....to	London.....	21	0 45	28 1 stoppage.

Cost of Locomotives and Carriages on two of the Principal English Railways.

The following table shows the enormous cost of machinery, on some of the English railways:

Table exhibiting the Expenditure of the Great Western and London and Birmingham Railways, for Locomotive Engines, Carriages and Wagons, from the commencement of the traffic to the present time; also, the Revenue Returns of each for the last two years, and the Expense of Locomotive Power, as deduced from the half-yearly Reports of each company:

Great Western—Total cost of locomotive engines, tenders, carriages, and wagons, to 30th June, 1845.....	£622,078	12	0
London and Birmingham, ditto.....	494,403	5	3
These sums are exclusive of the charges for locomotives, carriage and wagon repairs, included in the half-yearly accounts. These latter have amounted in the last two years to—			
Great Western—From 1st July, 1843, to 30th June, 1845.....	56,932	17	9
London and Birmingham, ditto.....	57,578	8	5
The cost of locomotive power, including repairs of locomotive engines, coal, coke, wages, and all incidental charges, have amounted in the same period to—			
Great Western—From 1st July, 1843, to 30th June, 1845.....	155,902	2	0
London and Birmingham, ditto.....	146,172	3	3
The revenue for the same two years, for the carriage of passengers, mails, goods, etc.—			
Great Western—From 1st July, 1843, to 30th June, 1845.....1,617,995	8	2	
London and Birmingham, ditto.....1,735,795	14	3	
The total mileage of every passenger for the last two years amounts to—			
Great Western—Total mileage from 1st July, 1843, to 30th June, 1845.....	128,524,232		
London and Birmingham, ditto.....	121,529,606		

	Gt. West.		Lon. & Bir.
Ratio of cost of engine and carriage plant.....	1	to	·768
Do. of repairs of engine for two years.....	1	..	1·011
Do. of cost of locomotive power for do.....	1	..	·049
Do. of passengers mileage for do.....	1	..	·945
Do. of total passengers revenues for do.....	1	..	1·072

During the periods which these returns embrace, the lengths of line worked by the Great Western have varied by the opening of different lines and branches; but from the 30th of December, 1844, to the 30th of June, 1845, the number of miles worked have been constant, viz: 222 miles. The length worked by the London and Birmingham have also been constant during the same period, and Mr. Creed in his evidence states (excluding branches), that the distance worked was 113 miles, and the revenue and mileage on this length, that is still excluding the branches, he gives as below.

Similar statements are given in the appendix of the revenue, mileage, etc., on the Great Western for a like period; from which we have the following comparisons:

	Miles.
Great Western, length of line worked.....	222
London and Birmingham, ditto.....	113
Great Western, total passengers mileage1.....	35,968,713
London and Birmingham, ditto.....	38,757,260
Great Western, miles run by passenger trains.....	761,483
London and Birmingham, ditto.....	456,526
Great Western, average number of passengers per trains.....	47·2
London and Birmingham, ditto.....	84·9
Great Western, average passengers revenue per trains per mile...	9s. 0d.
London and Birmingham, ditto.....	14s. 9d.

Machine to Measure the Velocity of Railway Trains.

Mr. Ricard made a communication to the Society of Arts on the 29th of April last, in relation to a machine for measuring the velocity of railway trains:

"The machine consists of two parts; one receives motion from the carriage, the other by clockwork. They are arranged in the following manner: an excentric is placed on the axle of the carriage, and gives motion by means of a connecting rod to a lever attached to the machine, and which lever acts upon a ratchet wheel, and is so arranged that each revolution of the wheel of the carriage advances the ratchet one tooth. An endless screw is turned on the spindle of the ratchet wheel, and gives motion to a small toothed wheel below, and on the spindle of which is fixed what may be termed a lateral excentric (as one part projects more than the other on the side of the wheel); against this the short end of a horizontal lever is pressed by means of a spring. As the excentric revolves from the projecting to the lower part, it moves the lever, and with it a pencil fixed at its other end, in one direction, till it reaches the lowest point, when, by a spring pressing upon it, it takes the opposite direction till it reaches the highest point, when it returns again. The wheels are so arranged that this excentric makes one revolution in each mile that a train travels. The clockwork is used to turn a drum upon which a ruled paper is wound. When the train is stopping at a station the pencil is stationery, and marks only a straight line, but when in motion diagonal lines are drawn by the action of the lever as described. The extreme distance between the two points of the diagonal lines determines the velocity at which the train has been travelling. Thus the train is made by this apparatus to keep a perfect register of the work done, which would at all times indicate any neglect of either the engineer or the conductor.

Miscellaneous Items.

The New Jersey railroad and Transportation company have declared a semi-annual dividend of three and a half per cent. payable on and after the 1st day of Aug. next.

The Utica and Schenectady railroad company have declared a semi-annual dividend of four dollars on each share, payable on the 1st of August.

Vermont Central Railroad.—At the annual meeting of the stockholders in this company, at Windsor last week, the following gentlemen were elected directors for the ensuing year:—Charles Paine, Northfield; Jacob Forster, Charleston; Robt. G. Shaw, and Samuel S. Lewis, Boston; Dan'l White, Charleston; Lucius B. Peck, Montpelier; John Peck, Burlington.

We understand the work of grading, etc., is proceeding vigorously.—*Vt. Free Press.*

Rutland Railroad.—From the spirit that appears to prevail on the line of this road, we are happy to infer that the instalment called for on the 12th June will be very generally paid, and that this important work will be speedily placed under contract. The papers in western Vermont are in high courage and spirit.—*Vermont Free Press.*

Railroads.—A meeting of the directors of the Champlain and Connecticut river road, (the Rutland,) is notified for the 29th inst., at Bellows Falls.

The annual meeting of the Central railroad took place on Wednesday last, at Windsor.—The old directors were re-chosen, with the exception of Messrs. Langdon and Baldwin, of Montpelier. Mr. Peck of Montpelier, and Mr. White, of Charlestown, Mass., chosen. The reports were encouraging, it is said of the engineer and treasurer. Gov. Hubbard addressed the meeting in reference to the Sullivan road connecting charter, and we hear of no expression of dissatisfaction. It is to be presumed no efforts will be wanting to build this road seasonably to connect the Central with the Cheshire.

By the engineers report, there are now over 2,000 hands employed on the Central railroad. Distance from Windsor to Burlington 115 miles. The work appears to be going on with success.

The Vermont Journal says the occasion of the late row on the Central road was from a demand by 200 of the men for payment, or part payment, on the 4th, although by their own agreement, they were to be paid only on the 15th of each month; and that they have been punctually paid. This throws the whole blame upon the men, and exonerates entirely the contractors or sub-contractors.

The new railroad from Lexington to a junction with the Fitchburg, is now completed.—Medford also has a short road to connect with the Maine extension road.

Northern Railroad, (Concord and Lebanon.)—The first annual report of the directors of the company has been published. The road is 68 miles long, and the maximum grade is 50 feet. 1,200 men are at present engaged on the line, [says the report,] and it is expected that the first section of 18 miles from Concord will be completed this year. $475,000 of the capital has been paid in. The directors have purchased 240 tons of railway iron of the Mount Savage co., and have contracted for 5,000 tons with the Tremont iron co.

Champlain and Connecticut River Railroad, [Rutland Road.]—A meeting of the N. H. railroad commissioners, was held at Walpole on Friday of last week, [the 7th inst.,] to decide upon the point of termination of the Cheshire road. The following letter from the Hon. Wm. Henry, one of the directors of the Rutland road, which we find in the Middlebury Galaxy, communicates the result of their consultations:

BELLOWS FALLS, July 8, 1846.

Dear Sir: I have the pleasure to inform you, that this morning the N. H. railroad commissioners decided that they could not extend the Cheshire road above Bellows Falls, or above the proposed junction of the Rutland road—or, in other words, that they could not consent to a connection between the Cheshire and Central—and that they were ready to proceed to the location to such points only as was desired to connect with the Rutland. So the great battle ended.

In haste, yours truly, WM. HENRY.

C. Linsley, Esq., A meeting of the directors we understand, is to be held on the 29th inst. The engineers are engaged in locating the road south from Middlebury.

Railroads.—We understand a majority of the New Hampshire railroad commissioners decided on Wednesday, not to lay out the Cheshire road any farther, at present, than Bellows Falls, and that a meeting of the directors of the Rutland road to be called, to take measures to ascertain the point of connection with the Cheshire. The Cheshire was laid out and appraized to Walpole village. Commissioners will probably finish all in August. As soon as this is accomplished satisfactorily, we learn the road is to be put under contract at once to Rutland. The passage of the independent charter, from Windsor to the Cheshire road will equally secure the connection, also, of the Central road with the Cheshire.

We are glad to learn the passage of the charter prayed for, of a railroad from Keene, through Winchester and Hinsdale to the Connecticut; for although it cannot be immediately undertaken, we doubt not it is destined to be the connecting river link of a Connecticut river road, from Hartford to the mouth of the Passumpsic. We say this, in view of the comparative cheapness of building down the Ashuelot—the immense saving—and that the loss of time from a direct road down the Connecticut, will not exceed 15 minutes.

The new Sullivan charter, to connect with the Cheshire, will no doubt be as satisfactory to the Central, as it will be to the Rutland road. It cures all the troubles which our Rutland friends had, and it has not, according to all outward evidence, for a long time been contemplated as desirable, to extend the Central below Windsor, though their charter allows the extension (the old Passumpsic charter not interfering) on the Vermont side, to Bellows Falls, and even to the south line of the state. To the Central it can make no possible difference as to the extent, south of the Sullivan road, unless a Cheshire interest might be supposed to affect the amount of passengers and freight between Bellows Falls and Charleston. These great roads are built for generations to come, and a supposed temporary benefit has had quite too much influence already, we think, to deter the forward march of the Rutland road.

The work is going on as rapidly and successfully as could be expected, on the whole line, from Fitchburg to Walpole, and when finished, it will be the most romantic and attractive road in New England. The splendid scene, on breaking through the elevation in view of Connecticut river, seen to some extent in the distance—the surrounding heights and the beautiful Putney meadows, is no where to be surpassed. The Surry summit pass, and the elevated views from Troy to Keene, will always be striking to strangers.

When we contemplate the great extent of this line of roads, reaching to the St. Lawrence at Ogdensburg, and the vast amount of business which must necessarily come over it, now that all obstructions to progress are apparently removed, we say to Cheshire stockholders, hold on in faith and your most sanguine expectations must be realized.

The great Portland road to Montreal has been contracted for as far as North Yarmouth. This is the direct road to Brunswick, Hallowell, Augusta and Bangor, and may be safely built.—*Keene Sentinel.*

Cleveland and Pittsburg Railroad.—We cut the following from the Ohio Star, and are pleased to see our Ravena neighbors agitating the railroad project. This road if completed will add twenty-five per cent. to the value of every acre of land in the counties through which it is to pass. To Clevelanders we can say, that attention is already diverted from this point, and yesterday one of our most intelligent steamboat captains informed us that the falling off in the travel through this city is very great—will not our rich men take heed.—*Cleveland Herald.*

Railroad Meeting.—All persons interested in the Cleveland and Pittsburg railroad will heed the call for a meeting on the subject, in another column. There is reason to expect that the means for completing the road may be obtained, if the people upon the route show reasonable confidence themselves in the value of the work.

The completion of the Baltimore and Ohio road to Pittsburg may now be looked upon as certain. The Cleveland and Pittsburg road will complete the connection between the lakes and the Atlantic.

The Pittsburg Gazette of Wednesday says: We have late advices from Baltimore, the purport of which is that the Pittsburg committee has had a satisfactory interview with the directors of the Baltimore and Ohio railroad company, and that the probability is, that a corps of engineers will be immediately placed on the Pittsburg and Connellsville route to prepare the line for contract.

Pittsburg and Connelsville Railroad.—The election for directors of this company, which took place at Pittsburg on Wednesday, resulted in the choice of the following named gentlemen: Wm. Robinson, Jr., Wm. M. Lyon, Harmar Denny, Jesse Carothers, Geo. Darsie, Jas. Kelly, Jas. Wood, N. B. Craig, Jos. Pennock, John Bissell, A. W. Loomis, J. K. Morehead. The Pittsburg Gazette remarks: "The ticket elected is a very good one, comprehending some of our most active business men and others of well known energy, prudence and perseverance."

The directors held a meeting on Thursday afternoon and organized the board by electing the following officers: Wm. Robinson, Jr., president; Wm. M. M. Lyons, treasurer; Jesse Carothers, secretary.

Among other important business transacted looking to an immediate commencement of operations on the road, a committee, consisting of Messrs. Denny, Darsie, Craig and Robinson, was appointed to proceed to Baltimore to confer with the directors of the Baltimore and Ohio railroad company. Provision was also made for re-opening the books shortly for

the subscription of further stock, of which due notice will be given.

The engineers have commenced a survey of the route intended to connect the Wilmington and Raleigh railroad, (N. C.) with the South Carolina road.

Macon and Western Railroad.—The brig *Excel* has been for three days engaged in discharging a cargo of machinery, intended for the Macon and Western railroad. There were in all something like fourteen hundred pieces, including wheels, axles, trucks, etc., etc. This looks something like preparing for business in good earnest. Our only regret is that all the machinery was not made nearer home, as it could have been, and would, no doubt have been, but for the fact that the company is anxious to put the road in complete operation, at an early day, in order to be ready for the growing crops, as well as for the transportation of the vast quantity of merchandize which is expected to pass over the road.—*Savannah Republican.*

The Columbus, Ohio Railroad.—The Cleveland Herald says, the commissioners appointed, under the law of last winter, authorizing the city to subscribe $200,000 to the road, have agreed with the directors of the company to appropriate the whole of it, if it should be necessary, on a portion of not less than 40 miles of the route the directors may select—provided funds from other sources shall be obtained by the directors, adequate to the completion of so much of the road.

The Mad river railroad, says the Springfield [Ohio] Republic, has effected a loan of money sufficient to complete the road to Springfield, there to connect with the Little Miami road to Cincinnati.

The Whitewater canal is drawn off below the city for repairs and cleaning out. There is a prospect of its doing a largely increased business this fall, from its extension, and the heavy crops of eastern Indiana. From the late report made to the council, it appears the business of 1845 was more than double that of 1844—the tolls being:

For the year ending	Nov. 30, 1844,	$4,230 73
" " "	Nov. 30, 1845,	8,359 58
From Nov. 30th '45 to	May 30, 1846,	4,309 81
"Water rents to date," - - -		1,577 32

The total cost of the canal was $838,108 27—of the stock of which, the city of Cincinnati owns $400,000, and the state of Ohio, 150,000. *Cin. Gazette.*

New Furnaces.—We learn from the New castle Gazette that a new furnace is about to be erected in North Beaver township, in this county, by Mr. Aaron Bender, which it is expected will be in blast early next spring.

We also learn that the Messrs. Shoenberger of Pittsburg, have lately purchased land and obtained the water right at the Hardscrabble dam, 16 miles up the Beaver, with the view of erecting a furnace. The location is said to be well adapted to that kind of improvement—having abundant deposits of iron and coal in the neighborhood.

These works we believe to be the beginning of an extensive iron business in Beaver county, if government would permit this important branch of domestic industry to prosper. No region in the state, probably, is richer in minerals than the northeastern portion of this county, where the coal and the iron are in close proximity, near to navigable streams with water power unequalled by any other section. Large bodies of land having these advantages re now in the market; and capitalists will do well to give them attention. And while we note these things, will the farmer consider whether it would be better to have 10 or 20 furnaces erected among them with one or two thousand laboring men, (all too, with families) to consume all their productions, or that establishments should be sustained in foreign countries.—*Beaver Argus.*

The directors of the Wilmington and Raleigh railroad have appointed Robt. K. Paine, of Charleston, engineer and superintendent of the road, in the place of McRee Swift, resigned.

Correspondents will oblige us by sending in their communications by Tuesday morning at latest.

PRINCIPAL CONTENTS.

AMERICAN RAILROAD JOURNAL.

PUBLISHED BY D. K. MINOR, 23 Chambers street, N.Y.

Saturday, August 1, 1846.

New York and Erie Railroad.

We learned from one of the commissioners, a few days since, that the surveys were so nearly completed that at their next meeting a full statement of the various routes might be expected.

We are, however, not quite convinced that sufficient energy is bestowed upon this affair. Who should make the movements for expediting business, we cannot say; but that it is high time for some decision and for the necessary steps towards the construction of the road, every one must admit.

Our eastern neighbors manage these things much better. By the way, would it not be a good thing for the directors of the New York and Erie to pay them a visit, and see what sort of roads are built in New England, and how rapidly they are finished?

Railroads and Common Roads.

The following statement, which we take from the Baltimore American, is a practical illustration of the advantages of railroads over common roads.

Under the head of "Western transportation," it is stated that "the charges on the Baltimore and Ohio railroad, from this city to Cumberland, 178 miles, are as follows, viz: coffee and manufactured tobacco, 25 cents per 100 pounds, and groceries, dry goods and other merchandize generally, 32 cents per 100 pounds," and by "wagons from Cumberland to Wheeling, 130 miles, it is 62½ cents per 100 pounds, and from Cumberland to Pitsburg, 112 miles, 50 cents per 100 pounds," or more than *twice* as much for 130 miles by wagon, as for 178 miles by railroad—to say nothing about the difference in *time*.

By the Susquehanna railroad and Pennsylvania canals, the rates for transportation are,

For dry goods, per 100 pounds		.....	87½ cents.
For bales	"	"	75 "
For groceries,	"	"	70 "
For coffee,	"	"	50 "

Surely railroads *are* monopolies.

Railroad Rates.

Why have some of our main lines of railroad failed to afford as much profit to their owners, and accommodation to the public, as might have been expected?

Were there any mystery in the answer to this question—did it need more than ordinary judgment to pronounce upon a matter of so much consequence to thousands, and we might say millions—we could well claim public honors for its solution. But with all due modesty, we must disclaim any desire for fame, and plainly tell the truth—that it needs no more than common sense, the use of one's eyes and ears, to understand both the cause and the cure of the difficulty.

If we travel over a line of railway from a populous city, to and through a region of country possessing ordinary natural advantages—and see houses "few and far between," villages scant, dwellings of an inferior order, and passengers the fewest possible in number—need we wonder at all these things, when we hear that the charges on the road are high for all, and for all alike—that no inducements are offered for permanent residence or business along the line—that the company has looked to the through traffic, and disregarded, nay even discouraged all other?

To men of *little* minds, it has seemed impossible, that while two, three or five dollars were obtained from those passing over the whole line of a road, any profit could be derived from those who paid but twenty, thirty or fifty cents. The reasoning would be as good, were a merchant to refuse to deal in flour, coffee or cotton, and only sell diamonds, gold and silver, because the price of the former articles was so much less than that of the latter. If a man fail in business from the attempt to carry into practice such absurdities, few are disturbed by it; but when a railroad fails to accomplish what it ought to do, the loss is serious to the community, even if the stockholders receive a fair dividend.

On most well managed roads, we think it will be found that the local travel is an important part, if not the greater part of the whole trade. In such cases we are sure to find a liberal encouragement to residence upon the line. One family brings another—relations and friends visit—the household wants must be supplied, either directly or indirectly—and an increase of freight is sure to follow an increase of residence. In this manner, the true and permanent traffic of a road is augmented, without any determined limit.

Were the right policy adopted upon some works which we might name, the ride over the roads would be more enticing even to through travellers; and although the lovers of the picturesque might be dissatisfied at the disappearance of the wilderness and desert, the lover of humanity would be equally pleased at the change to the farm and garden.

We give, in this number, an article on "railroad rates," signed "Baltimore"—the good sense and sound argument of the writer deserve commendation—while we are indebted to him for some details of the "magic" arts by which Massachusetts and her neighboring states have performed such wonderful things in the railroad line.

The design of this communication is to direct public attention to the present mode of managing our railroads—to contrast with this the manner of doing business on other roads—and thus to cause such changes to be made with us as experience elsewhere has shown to be beneficial. We have four lines of railroads leading from Baltimore, inclu-

sive of the Washington branch of the Baltimore and Ohio railroad. Let us suppose that along the lines of each of these railroads for the distance of thirty miles from the city of Baltimore, the whole country was cleared and improved, and residences built and occupied. What would be the effect of this? No citizen of Baltimore can doubt that the city itself would be greatly benefitted. The country through which these roads pass would assume an appearance greatly different from its present condition. The operations of the railroads themselves would be vastly increased —their revenues greatly enlarged—and such a business would be secured as would be permanent and steady, and cause the dividends to be regular and large, and each year an improvement on these dividends might reasonably be expected.

Every person interested in these events, would greatly rejoice to see the result above described—all must consider this a great desideratum. But many will ask how can this be accomplished? They will doubt its practicability. They will fear the result of any experiment. To these we may say, this is no longer an experiment. The results elsewhere have proved the practicability of doing what is now suggested. The effects above described have been brought about along the lines of railroads constructed since ours have been made. These effects have been accomplished in a few years. We have nothing more to do than to pursue the same course; to follow the example which has already been so successful.

There has been no magic at work in Massachusetts. A little practical *common sense* has been employed. *They have not adhered to a system because it was already in use;*—they have watched the times and the onward progress of events. They have seen and felt the influence and effect which a large city has upon the surrounding country. They believed that by bringing the country as near the town as possible, by furnishing facilities of transportation between the two, the unavoidable effect must be to benefit both, as well as the parties granting these facilities. They knew that to do this to any great extent they must establish *low tolls for passengers and transportation;* that the way travel and trade must be fostered and encouraged—and that so far from looking exclusively to through trade and travel, the true policy is to promote each alike and to the full extent of their ability. They have not thought it wise or politic to make no difference between the person who uses a railroad once, or it may be oftener, or every day in the year, and him who it may be travels on it but once in his lifetime. No; their shrewdness taught them the wisdom of encouraging settlements along the lines of their railroads; they felt that the more extensive these became the better it would be for their works. Hence they have adopted the system of low tolls; they have encouraged the daily and constant use of their railroads, by disposing of tickets to passengers by the season, sometimes for the year, for six months or three months. As a further and additional encouragement, they will sell tickets in large numbers to a single person, and as an inducement to the purchase, will make a large deduction or discount from the usual price or cost of tickets.

By such means they in Massachusetts have made their works most productive; they have been enabled to declare large dividends, and have caused these improvements to be a great benefit to all parts of the country into which they have been extended. The city of Baltimore now numbers nearly one hundred and twenty thousand inhabitants. The country around, it is true, is not densely inhabited. The effects of our railroads upon the country through which they pass have been inconsiderable. What is the cause of this? Why this great difference in the effects of the cause? The answer to these questions is obvious to all who have at all considered the subject. Little or no attention has heretofore been paid by our railroad companies to the way trade and travel. The inhabitants of the country through which the roads have been constructed have been accustomed to see the trains of cars pass along day by day for many years. They have felt no benefit from this; they have experienced no additional facilities; and if they have been tempted to use the cars, they too often find the charge so heavy that it is far better to employ their own conveyances as well in carrying their property as their persons. The Massachusetts system, if adopted here, could not fail to work good results. The first effects here would not equal those now realized there. But in a few years the people of Maryland—I mean those not stockholders—instead of being careless about these works, would find how immensely benefitted they are, and instead of speaking of them as too many now do, as injurious to the country in the vicinity of Baltimore, would declare that nothing could be a greater source of prosperity.

It is true that there is not much expectation of inducing the directors and managers of our railroad companies to adopt the Boston system. They are unwilling to admit that they have heretofore been pursuing an unwise and inexpedient course; that they have failed to produce effects in all respects most desirable. In fear and trembling they adopted a change of tolls on the Washington branch of the Baltimore and Ohio railroad company. This was literally forced upon them by public opinion. The result of this change has undoubtedly been good. The Baltimore and Susquehanna railroad company has benefited by reducing its tolls, but it has not, as it ought to have done, adopted such a system as that of Massachusetts. We ought, nevertheless, to urge the adoption of some plan similar to those which elsewhere have worked so well. A comparison between the country around Boston and along the lines of the railroads, with that around Baltimore ought to be made. The increase of Baltimore, which for the last few years has been so great, has not been felt in the surrounding country. We have enterprize and capacity sufficient to avail ourselves of all facilities which may arise, and are equal in that respect to the people of Massachusetts. The natural advantages of our country for agriculture and manufacturing purposes are equal to those of the country surrounding Boston. All that we want is that our railroads should be conducted upon the same principles as to tolls and freights. Let these be reduced, and let the way travel and trade be encouraged as it should be, and no man can tell how great and beneficial will be the results thereof.

The following are the tolls paid by passengers on the railroads below specified, which are known to be correct, and which show what has been the system adopted by the Bostonians, to increase travel on their railroads.

Boston and Maine Railroad.

	Miles.	1 year.	6 m.	3 m.	Sing. tick.
Boston to Malden....	5...	$35.	$19.	$10..	15 cts.
" N. Malden.	7...	40.	22.	12..	20 "
" S. Reading.	10...	45.	24.	13..	25 "
" Reading...	12...	50.	27.	15..	30 "
" Wilmington	16...	60.	33.	18..	40 "
" Andover...	23...	80.	40.	20..	60 "
" Haverhill..	32...	100.	50.	25..	85 "

Boston and Providence Railroad.

	Miles.	1 year.	6 m.	Sing. tick.
Boston to Jamaica Plain..	4...	$25.....		12½ cts.
" Dedham.....	11...	50.	$27½.	25 "
" Canton.....	14.....		35..	40 "

Boston and Worcester Railroad.

	Miles.	1 year.	6 m.	3 m.	Sing. tick.
Boston to Brighton...	5...	$35.	$23.	$15	not ascer-
" Newton....	9...	40.	25.	16	[tained.
" Needham..	13...	50.	30.	22	

Boston and Lowell Railroad.

	Miles,	6 m.	3 m.	Sing. tick.
Boston to Lowell...	26....	$65..	$32 50....	65 cts.

and in the same proportion for less distances.

Eastern Railroad.

	Miles.	1 year.	6 m.	3 m.	Sing. tick.
Boston to Lynn.....	9...	$50.	$35.	$20..	25 cts.
" Salem.....	13...	75.	50.	30..	40 "
" Ipswich....	24...	100.	75.	45	not asc'd.

On the Eastern railroad single tickets by the quantity may be purchased at the following rates of discount:

100 to 200 tickets at	12½	per cent.	discount.	
200 to 300 "	25	"	"	
300 to 400 "	33⅓	"	"	
400 to 500 "	40	"	"	
500 to 600 "	45	"	"	

A season ticket entitles the purchaser on all these roads to two passages a day, and of course is not transferable. By comparing the prices above mentioned, it will be seen that the price of a single passage to a person having a season ticket, is from one-half to one-quarter of the ordinary rate. These companies have found it to be their best policy to put their prices low, and that the reduction of the fare has been followed by an increase of travel more than sufficient to compensate the loss on each ticket. On the Lowell railroad, the price of single tickets was formerly $1, but it has been gradually lowered, till now it is but 65 cents, and so on the other roads.

It is hoped that the example of the Bostonians will be followed here, and that a reduction will shortly be made on the lines of all our railroads, not only with respect to passengers, but to all articles of merchandize; that the local travel will be encouraged and supported, and the result cannot fail to be greatly beneficial to the railroad companies, to Baltimore and the adjoining country.—*Balt. American.* BALTIMORE.

A Memoir on the Resistances to Railway Trains at Different Velocities.

Institution of Civil Engineers, May 26.—Sir John Rennie, president, in the chair.—The paper read was "A Memoir on the Resistance to Railway Trains at Different Velocities," by Wyndham Harding, C. E. He commenced his paper as follows:

In 1837, the speed attained on railways was a recent subject of wonder. No sooner was the fact of the daily attainment of speed which then appeared extraordinary, established, than the following questions presented themselves and became of practical interest. What were the resistances experienced at these high velocities? Were they solely those due to friction and the gravity of the train when ascending an inclination which experiments showed to be independent of the velocity of the moving mass, or were they resistances which varied with the velocities, and if so, from what cause did they arise, and what ratio did they bear to the velocity? The introduction of a smooth iron rail and an iron wheel running upon it bid fair to reduce materially the surface resistance, which had hitherto been the retarding force most felt in the traction of wheel carriages. But it was clear that a railway train, impelled as it was by the action of a limited quantity of steam (a vapor used at an elasticity only about four times that of air,) would still have to encounter a formidable resistance from the atmosphere, as this resistance makes itself seriously felt in the motions of all bodies, light or heavy, passing through it, and increases rapidly with the velocity. The existence of this retarding cause was of course not overlooked by the engineers engaged in the working of railways, and the development of the new system of locomotion, but they had something else to do at that time, than to sit down and write on that or any other subject. So far as has come to my knowledge, Mr. Herapath in the Railway Magazine of 1836, was the first writer who drew attention to the practical effect which the resistance of the atmosphere would have upon railway trains moving at high velocities, giving a table founded, not on experiments, but, to use his own words, on deductions from physical principles, and showing a computed arithmetical value of the retarding force, in pounds, at various velocities. No recent experiments were at that time extant on the resistance offered by the air to bodies moving through it, and the experiments recorded by Dr. Hutton and Smeaton, were, I believe it may be said, not satisfactory, especially at high velocities. It was therefore a matter of much importance and interest to measure and determine the value of the resistances, whether from the air or other causes, which exhibit themselves in railway trains moving at various velocities.

I. At the meeting of the British association for the advancement of science, held at Liverpool, in 1837, the subject was accordingly discussed, when much discordance of opinion was found to prevail with regard to it among the members of the Mechanical section, which included several railway engineers. A committee was therefore appointed to investigate the subject, consisting of Mr. Rennie, Mr. (now Sir John) Macneil, Mr. Locke, Dr. Lardner, Mr. Harman Earle and Mr E. Woods; and under their superintendence an elaborate experimental inquiry was commenced, and continued during 1838 and 1839. In the autumn of 1838 it fortunately happened that the question of resistance of trains became the subject of discussion between Mr. Nicholas Wood and Mr. Brunel, on the occasion of the deliberation of the proprietors of the Great Western railway as to the expediency of altering the gauge of 7 feet to that of 4 feet 8½ inches, Mr. Nicholas Wood adopting a much higher estimate of the increase of resistance with the velocity than Mr. Brunel would admit. Mr. Brunel maintained that the result arrived at by the experiments of the committee of the British association and Mr. N. Wood were altogether fallacious, adducing arguments to invalidate the conclusions to which they pointed, based on the modes of conducting the experiments, and describing the arrangement by which he intended to diminish whatever objectionable amount of resistance (arising from the passage of the train through the air) might be found to exist in practice, viz: by shaping the front of the engine on a principle analogous to that of the bow of a boat. The committee accordingly, in 1839, varied the modes of making the experiments which had been pursued in 1838, in order to check the first experiments, and to ascertain how far any of the objections raised to the mode of conducting these experiments were of force. In this series of experiments the measure of the force of resistance was in each case obtained by a comparison with the standard afforded by the effect of the action of gravity on trains of known weight passing over portions of railway of known inclinations. The results of the experiments I propose to give in the present paper, and shall refer for the details to the printed reports and tables in the reports of the British association.

II. In 1843, Mr. Scott Russell undertook some experiments on the Sheffield and Manchester railway, with a view of ascertaining, himself, the resistances to trains at various velocities. Mr. Scott Russell communicated the result of these experiments to the British association in 1844; but as the details were not printed, I have given those of the experiments on which I argue, as well as the general results: Mr. Russell having afforded me such details.

III. In 1844 and 1845 a new and very satisfactory instrument, for measuring the resistance of trains, was afforded in the atmospheric apparatus erected on the Kingstown and Dalkey line. The resistances of trains indicated by that apparatus are referred to in Mr. Robert Stephenson's printed report on the atmospheric system; this particular branch of the subject was also especially brought under the attention of the members of this institution by Mr. Bidder in 1845, who contributed a table of resistances compiled from the experiments detailed in Mr. R. Stephenson's report.

IV. In May, 1845, the writer of these remarks made a few experiments on the inclined plane of the Bristol and Gloucester railway (1 in 74) with a view to ascertain the resistances of trains in descending that incline freely. The details and results of these experiments will be given in the following remarks. These are, so far as the writer is aware, the only experiments of the sort on record as to the resistances on trains running on a railway of 7 feet gauge—all the other experiments named having been made on railways of the 4 feet 8½ gauge.

V. In the commencement of the present year, 1845, the writer made some experiments on the Croydon atmospheric railway; the details of those experiments, which are treated of in the following remarks, will be given.

VI. At the end of the year 1845, the gauge commissioners ordered experiments to be made on railways of either gauge. In these experiments all the circumstances were carefully noted; they, therefore, afford the means of comparing the effect due to the water evaporated, under the known conditions, with the work actually performed, in drawing trains at various velocities from 20 to 60 miles per hour.

VII. Mr. Scott Russell, in the commencement of this year, made experiments on trains of the Southeastern railway with Morins' dynamometer. This beautiful instrument, which Mr. Russell lately exhibited to the institution, promised to supply the want, so long experienced by railway engineers, of a dynamometer whose indications can be trusted to. The details and results of these experiments will be given in the following remarks.

The measure of the resistances in the series of experiments I., II., IV., V., is the effect of gravity on descending plains of known inclinations. In the series III. and V., the measure is the pressure on the travelling piston of the atmospheric apparatus indicated by the travelling barometer, less an allowance for the friction contingent on the travelling piston and accessories. In the series VII., the measure is the self-registered indication of the dynamometer.

In the series VI., the measure is the effect due to the quantity of water converted into steam at a certain known pressure, acting in a locomotive engine, of which the dimensions are known. We have thus recently been put in possession of two dynamometers, which promise to be trustworthy, whereby to measure the resistance to railway trains at different velocities, namely, the difference of pressure on either side of the travelling piston on the atmospheric apparatus and Morins' dynamometer. We are, now in a position to compare the resistances, measured by four different means.

The object of this paper is, out of this large collection of experiments, to present in the simplest form those results which afford the means of measuring the resistances of passenger trains, of different weights, running at different velocities, on a railway in good repair, with no fortuitous circumstances tending to increase the resistance, as it is thus only that we may hope to obtain a series of facts which may enable us to determine prac-

tically the law of the resistances. It is clear that in such an inquiry, while our experiments must be made on ordinary trains, it is at the same time necessary to exclude carefully all casual circumstances, such as wind, sharp curves, unusual want of repair in the rails or carriages, as the resistances arising from such disturbing causes can be expected to follow no law. It should be remembered that all such fortuitous circumstances as we have named, with the exception perhaps of a wind right abaft, will tend to magnify the apparent resistance to the train, and we have therefore to guard against rating the resistances too high. Acting on this principle, I have gone through the different series of experiments enumerated, and have selected all those cases (and those only) which come under the following simple conditions. *A uniform velocity maintained for a distance sufficient to assure us that it is really a uniform and not a retarding or accelerating velocity; on a line free from sharp curves on a calm day.* In dealing with such a mass of figures as the various experiments which I have mentioned exhibit, some principle of selection must be determined upon, and I venture to think that the presentation of those results only which are exhibited under the above conditions, will simplify* the subject we have to consider, and assist us in arriving at the general law of resistance to trains of varying velocities.

Before analysing, as I propose to do, the experiments *seriatim*, it may be right to mention that Mr. Brunel, Mr. D. Gooch and Mr. Samuda, one of the patentees of the atmospheric system, differ widely from other engineers on the amount of resistance at high velocities. Mr. Brunel and Mr. Samuda have in the inquiry before the committee of the Newcastle and Berwick railway last year, stated that the resistance to an ordinary passenger train at 60 miles an hour would not exceed 17 lbs. per ton. On this assumption their calculations were made as the tractive power necessary to be provided in the case of that line, and Mr. D. Gooch, taking the resistance to an ordinary passenger train to be 18 lbs. per ton at 60 miles an hour, made this the basis of an elaborate table of the comparative power of narrow gauge and broad gauge engines, laid before the gauge commissioners, and printed in the minutes of evidence taken by the commissioners. Other engineers, as Mr. Stephenson, Mr. Locke, Mr. Bidder, Mr. Scott Russell, have estimated the resistances at 60 miles an hour, to be at least upwards of 40 lbs. per ton, or nearly three times as much as the three gentlemen first named considered it to be.

Under these circumstances it is unnecessary to say that it is a question of much interest and importance to ascertain the true law of resistance to trains at various velocities.

Mr. Harding then proceeded to discuss the various experiments seriatim, and exhibited all the results in a series of valuable tables, which will soon, we hope, be published by the institution for the benefit of the profession. He also gave a formula, which actually represented all the experiments, which were now for the first time thus brought together; and he showed by various diagrams the degree of coincidence between this formula and the results of experiment. The formula which he gave is—

$$R = 6 + \frac{V}{3} + \frac{(V \times 0025 \times n)}{T}$$

where R is the resistance per ton in pounds, V the velocity of motion, and n the number of square feet of frontage of the train. These are all taken on the level. The discussion will be renewed next meeting.

Report on the Vibration produced by Trains in passing through the Tunnel of Kensal Green.

To R. Stephenson, Esq., Sir: I have the honor to submit to you the results of the series of experiments performed at Kensal Green, with the view of ascertaining to what distance the vibration producedby a train in passing through the tunnel may be sensible.

In these experiments, I employed a basin of quicksilver, which was placed on the ground and fixed as firmly as possible. A lens carrying a set of cross wires was attached, in such a manner that the image of the wires could be reflected in the mercury, and therefore any vibration of the mercury could be easily detected by the oscillation of the reflected image. A piece of glass effectually protected the mercury from currents of wind, and the experiments were thereby rendered very satisfactory. In observing the reflected wires, I did not employ a telescope, as a previous trial had convinced me that no material advantage would arise from the use of a telescope, since the sensibility of the eye in detecting the least vibration of the mercury was far greater than I could have expected, and more than sufficiently delicate for the purpose in view.

The situation selected was a field belonging to Mr. Sullon, on the north side of the tunnel. The distances were measured with a land chain from the northern side, as nearly as its position could be ascertained.

April 16th.—The day cloudy, but without rain, a moderate breeze blowing from the eastward.

Distance 60 ft. Down train very great vibration, the reflected image of wires was quite invisible from agitation as the train approached the centre of the tunnel; the vibration commenced immediately the train entered the tunnel, and ceased the moment that it left.

Distance 138 ft. Down train—the vibration began about two seconds after the train entered, and ceased about the same time before it was out of the tunnel; though the amount of oscillation was much less than at 60 ft., it was still considerable.

Distance 300 ft. Down train—the vibration began immediately the train was in the tunnel, and continued about ten seconds after it had left; the train was in the tunnel twenty seconds.

Distance 472 ft. A heavy down train—thirty-two seconds in passing through the tunnel. The vibration was seen about seven seconds after it was in the tunnel, and ceased four seconds before it left. The amount was rather considerable,

Distance 572 ft. Up train—twenty seconds in tunnel. The oscillation of the mercury was sensible five seconds after the train entered, and ceased ten seconds before it emerged from the tunnel. Another up train produced the same effect.

Distance 644 ft. A down train—twenty seconds in the tunnel—produced *not the slightest effect.* The observation very satisfactory.

Distance 609 ft. A down train—twenty-seven seconds in the tunnel. The vibration so excessively small as to be visible only by transient glimpses when the train was fairly in the tunnel. *I consider this to be the distance where the vibration becomes sensible, and beyond it the trains will have no perceptible effect in this locality.*

The following estimated values for *amount* of vibration, though necessarily very rude approximations, may still be interesting:

Distance	60	feet	Amount of vibration		100
"	138	"	"	"	40
"	300	"	"	"	25
"	472	"	"	"	10
"	572	"	"	"	5
"	609	"	"	"	1
"	444	"	"	"	0

On April 11th, some observations were attempted in a field adjoining that belonging to Mr. Sullon, at a distance from the tunnel of about 400 feet but the perpendicular drawing from the place of observation to the tunnel, would fall not more than 50 feet from the entrance, and this circumstance, in addition to most unfavorable weather, probably prevented my seeing any vibration. An objection being raised on this day against the performance of the experiments on Mr. Sullon's property, I was unable to proceed until the 15th, when that gentleman was kind enough to allow the use of the field on the north side of the tunnel, a most favorable locality for the purpose.

On April 15th, I made some experiments to ascertain whether a horizontal wire of a transit telescope placed at different distances from the tunnel to bisect a distant object would show the vibration at those distances to be sensible. I very soon found that this method was not sufficiently delicate, as no vibration could be detected even at 60 feet distance from the side of the tunnel. The experiments with mercury on the following day were made under very favorable circumstances, and the results are I believe, worthy of great confidence.

J. R. Hind.

Mr. Bishop's Observatory, Regents Park, April 17, 1846.—Railway Chronicle.

* By only regarding uniform velocities, we get rid of the correction necessary on account of the rotation of part of the moving mass of a train, viz: the wheels and axles, and as it appears upon the face of the experiments that the resistances increase with the velocities, we also get rid of the doubt as to whether the mean resistance which only can be ascertained in the case of varying velocities is referable to the mean velocity or not. There are also other reasons for preferring as measures of resistance results obtained from uniform velocities to those obtained from varying velocities.

Railroads and Milk.

In the "new company," mania of 1845, a project was started for supplying London with pure milk. One of George Cruikshank's caricatures of the day represented the stock as consisting of one cow and two pumps. But now it seems railways are about to do what was twenty years ago sneered at as a joke. An Essex paper states that the neighborhoods of Romford, Brentford, etc., on the Eastern Counties line, the inhabitants of which would probably, not many years ago, have laughed at the idea of sending their milk to the metropolis, now carry on a very considerable and daily increasing trade in that article. Travellers can hardly fail to see a number of huge cannister-shaped tin vessels, used for the purpose of transit; and these having a van specially appropriated to them, the milk reaches London in prime condition. At Chelmsford, one extensive grazier at least, is preparing to enter into the same trade. This promises a complete revolution, not only in the price, but the composition and quality, of the above extensive article of consumption.—When each railway from the grazing districts into London shall have become "a milky way," there will no longer be the temptation which at present exists, to resort to artificial ingredients; and people—even milkmen, will be content to leave the manufacture of their commodity to the proper artificers—the cows.

We suspect that the "discovery" announced below has, to speak technically "a screw loose" somewhere. If the last sentence means anything it should read—*decreases inversely as the square of the thickness*—a very material and fatal alteration.

Important Discovery in the Perfection of the Principles of the Atmospheric Railway.—A gentleman of long standing as a first rate mechanic, of very great practical experience and of the highest attainments in chemical science, has just completed a large working model, which he is about to exhibit in the principal towns in England, clearly demonstrating this extraordinary new principle, which does away with the slit or opening in the tube, and, of course, with all the expense, trouble, and loss of power, occasioned by the top valve. This perfection of the application of steam power to locomotion, is attained by electro-magnetism, by means of a curious new metallic compound for the piston, and an equally novel, but most effective, compound to act on the outside of the valve, which at once completely attaches, or rivets it, always opposite the piston, whatever the weight of the train or the speed may be. It also possesses the singular property, that its power of attraction increases as the square root of the thickness of the tube.—*Mining Journal.*

Atmospheric Engine Improvements.—Mr. R. Atha, engineer, of Walton, near Wakefield, has recently patented some improvements in atmospheric engines. The arrangement of apparatus, he proposes, to consist of four or more sails, fixed upon "a stationed supporter," and driven or moved by the power of the wind; two force pumps are attached to the shaft or fulcrum of the sails, for the purpose of forcing air into a cast iron box or boxes, termed the main receiver or receivers; each receiver is provided with a safety valve, to prevent an explosion occurring from the air being too much compressed, and also with a pipe, furnished with a stop-cock; the outer end of the pipe is suitably formed for being attached to another receiver, called a minor receiver, which is fixed upon the frame of a locomotive engine, and connected by a pipe with the working cylinders of the same; the engine is constructed in the same manner as the locomotive engines worked by steam.—When the pipe from the main receiver is connected to the minor receiver, the stop-stock is opened, and the air rushes from the former into the latter, which thus becomes filled with compressed air: the stop-cock is then closed, and the pipe released; and the communication between the minor receiver and the cylinders being opened, the engine is put in motion.—*Mining Journal.*

VALUABLE PROPERTY ON THE MILL Dam For Sale. A lot of land on Gravelly Point, so called, on the Mill Dam, in Roxbury, fronting on and east of Parker street, containing 68,497 square feet, with the following buildings thereon standing.

Main brick building, 120 feet long, by 46 ft wide, two stories high. A machine shop, 47x43 feet, with large engine, face, screw, and other lathes, suitable to do any kind of work.

Pattern shop, 35x32 fe. with lathes, work benches,

Work shop, 86x35 feet, on the same floor with the pattern shop.

Forge shop, 118 feet long by 44 feet wide on the ground floor, with two large water wheels, each 16 feet long, 9 ft diameter, with all the gearing, shafts, drums, pulleys, &c., large and small trip hammers, furnaces, forges, rolling mill, with large balance wheel and a large blowing apparatus for the foundry.

Foundry, at end of main brick building, 60x45½ feet two stories high, with a shed part 45½x20 feet, containing a large air furnace, cupola, crane and corn oven.

Store house—a range of buildings for storage, etc., 200 feet long by 20 wide.

Locomotive shop, adjoining main building, fronting on Parker street, 54x25 feet.

Also—A lot of land on the canal, west side o Parker st., containiug 6000 feet, with the following buildings thereon standing:

Boiler house 50 feet long by 30 feet wide, two stories.

Blacksmith shop, 49 feet long by 20 feet wide.

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Many of these ropes have been in constant operation in the different mines in England, and on the Blackwall and other inclined planes, for three and four years, and are still in good condition.

They have been applied to almost every purpose for which hempen ropes have been used—mines, heavy cranes, standing rigging, window cords, lightning conductors, signal halyards, tiller ropes, etc. Reference is made to the annexed statement for the relative strength and size. Testimonials from the most eminent engineers in England can be shown as to their efficiency, and any additional information required respecting the different descriptions and application will be given by

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WIRE ROPES.				HEMPEN ROPES.			CHAINS.		STRENGTH.
Wire gauge number.	Circumference of rope.	Weight per fathom.		Circumference of rope.	Weight per fathom.		Weight per fathom.	Diameter of iron.	Tons.
	INCH.	LBS.	OZ.	INCH.	LBS.	OZ.	LBS.	INCH.	
11	4½	13	5	10	24	–	50	15-16	20
13	3½	8	3	8½	16	–	27	11-16	13½
14	3½	6	11	7½	12	8	17	9-16	10½
15	2½	5	2	6½	9	4	13½	1-2	7½
16	2½	4	3	6	8	8	10½	7-16	7

N.B. The working load, with a perpendicular lift, may be taken at 6 cwt. for every lb. weight per fathom, so that a rope weighing 5 lbs. per fathom would safely lift 3360 lbs., and so on in proportion. 1y24

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Railroad companies may be supplied with Spikes having countersink heads suitable to holes in iron rails, to any amount and on short notice. Almost all the railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

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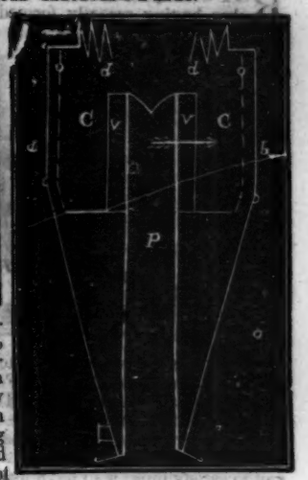


TO THOSE INTERESTED IN Railroads, Railroad Directors and Managers are respectfully invited to examine an improved SPARK ARRESTER, recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both passenger and freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits:

E. A. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendant Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendant Philadelphia, Reading and Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.; W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensselaer, Engineer and Sup't Hartford and New Haven Railroad; W. R. M'Kee, Sup't Lexington and Ohio Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabethtown and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah, Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, President Long Island Railroad, Brooklyn.

Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city or to Hinckly & Drury, Boston, will be promptly executed. FRENCH & BAIRD.

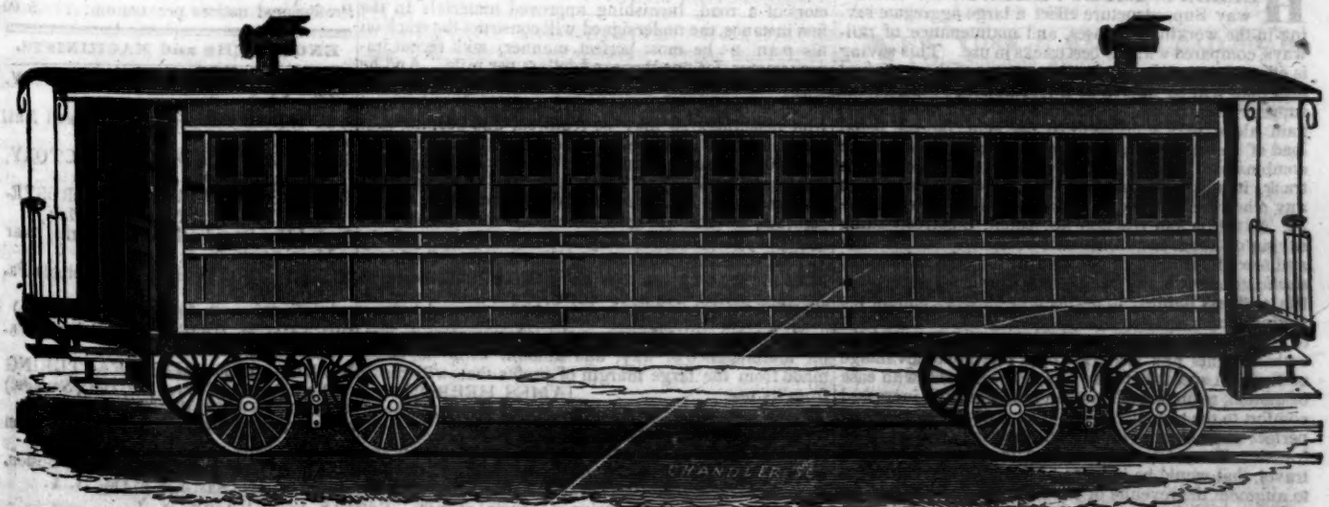
N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms.

Philadelphia, Pa., April 6, 1844.

*** The letters in the figures refer to the article given in the *Journal* of June, 1844. ja45

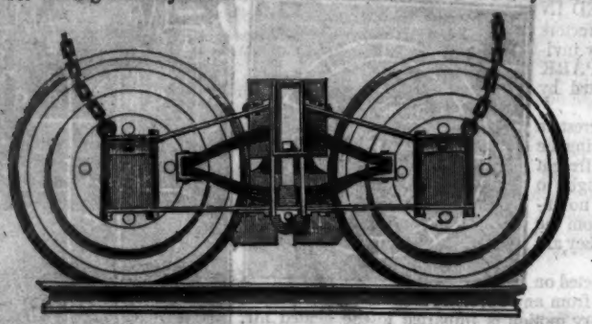
BENTLEY'S PATENT TUBULAR STEAM BOILER. The above named Boiler is similar in principle to the Locomotive boilers in use on ou Railroads. This particular method was invented by Charles W. Bentley, of Baltimore, Md., who has obtained a patent for the same from the Paten Office of the United States, under date of September 1st, 1843—and they are now already in successful operation in several of our larger Hotels and Public Institutions, Colleges, Alms Houses, Hospitals and Prisons, for cooking, washing, etc.; for Bath houses, Hatters, Silk, Cotton and Woollen Dyers, Morocco dressers, Soap boilers, Tallow chandlers, Pork butchers, Glue makers, Sugar refiners, Farmers, Distillers, Cotton and Woollen mills, Warming Buildings, and for Propelling Power, etc., etc.; and thus far have given the most entire satisfaction, may be had of D. K. MINOR, 23 Chambers st. New York. a

DAVENPORT & BRIDGES' CAR WORKS.



DAVENPORT & BRIDGES CONTINUE TO MANUFACTURE TO ORDER, AT THEIR WORKS, IN CAMBRIDGEPORT, MASS. Passenger and Freight Cars of every description, and of the most improved pattern. They also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices. All orders punctually executed and forwarded to any part of the country Our Works are within fifteen minutes ride from State street, Boston—coaches pass every fifteen minues. 1y1

RAY'S EQALIZING RAILWAY TRUCK.—THE SUBSCRIBER having recently formed a business connection in the City of New



York, expressly for the manufacture of the newly patented and highly approved Railroad Truck of Mr. Fowler M. Ray, is ready to receive orders for building the same, from Railroad Companies and Car Builders in the United States, and elsewhere.

The above Truck has now been in use from one to two years on several roads a sufficient length of time to test its durability, and other good qualities, and to satisfy those who have used it, as may be seen by reference to the certificates which follow this notice.

There have been several improvements lately introduced upon the Truck, such as additional springs in the bolster of passenger cars, making them delightful riding cars—adapting it to tenders, trucks forward of the locomotive, and freight cars, which, with its original good qualities, make it in all respects the most desirable truck now offered to the public.

Orders for the above, will, for the present, be executed at the New York Screw Mill, corner 33d street and 3d avenue, (late P. Cooper's rolling mills) and at the Steam Engine Shop of T. F. Secor & Co., foot of 9th street, East river, (of which firm the subscriber was late a partner) under the immediate supervision of Mr. Ray himself.

Several sets of trucks containing the latest improvements have recently been turned out for the New York and Erie railroad, and the New Jersey Transportation company, which may be seen upon said roads.

The patronage of Railroad Companies and Car Builders is respectfully solicited.

New York, May 4, 1846. W. H. CALKINS, and Others.

To all whom it may concern:—This is to certify that the New Haven, Hartford and Springfield railroad co., have had in use six sets of F. M. Ray's patent trucks for the last 20 months, during which time it appears to me, they have proved to be the bes and most economical truck now in use.

[Signed,] WILLIAM ROE, Sup't of Power.

I certify that F. M. Ray's Patent Equalizing Railroad Truck has been in use on the Philadelphia and Reading railroad for some time past, under a passenger car.

For simplicity of construction, economy in cost, lightness of material, and extreme ease of motion, I consider it the best truck we have ever used. Its peculiar make also renders it less liable to be thrown off the track, when passing over any obstruction. We intend using it extensively under the passenger and freight cars of the above road.

Reading, Pa., October 6, 1845. [Signed,] G. A. NICOLL, Sup't Transportation, etc., Philadelphia and Reading Railroad.

To all whom it may concern:—This is to certify that the N. Jersey Railroad and Transportation company have used Fowler M. Ray's Truck for the last seven months, during which time it has operated to our entire satisfaction. I have no hesitation in saying that it is the simplest and most economical truck now in use. [Signed,] T. L. SMITH,

Jersey City, November 4, 1845. N. Jersey Railroad and Transp. Co.

This is to certify that F. M. Ray's Patent Equalizing Railroad Truck has been in use on the Long Island railroad for the last year, under a freight car.

For simplicity of construction, economy in cost, lightness of material and ease of motion, I consider it equal to any truck we have in use.

Long Island Railroad Depot, Jamaica November 12, 1845. } [Signed,] JOHN LEACH, Sup't Motive Power.

1y19

HERRON'S PATENT AMERICAN RAILWAY TRACK,

As seen stripped of the top ballasting

HERRON'S IMPROVEMENTS IN RAILway Superstructure effect a large aggregate saving in the working expenses, and maintenance of railways, compared with the best tracks in use. This saving is effected—1st, Directly by the amount of the increased load that will be hauled by a locomotive, owing to the superior evenness of surface, of line and of joint. This gain alone may amount to 20 per cent. on the usual load of an engine.—2d, In consequence of the thorough combination, bracing, and large bearing surface of this track, it will be maintained in a better condition than any other track in use, at about one-third the expense.—3d, As action and reaction are equal, a corresponding saving of about two-thirds will be effected in the *wear* and *tear* of the *engines* and *cars*, by the *even surface* and *elastic structure* of the track.—4th, The great security to life, and less liability to accident or damage, should the engine or cars be thrown off the rails.—5th, The absence of jar and vibration, that shake down retaining walls, embankments and bridges.—6th, The great advantage of the high speed that may be safely attained, with ease of motion, reduction of noise, and consequently increased comfort to the traveller.—7th, The really *permanent* and perfect character of the Way, insuring regularity of transit. To which may be added the great increase of travel, that would be induced by the foregoing qualities to augment the revenue of the railroad.

The cost of the Patent track will depend on the quantity and cost of iron and other materials; but it will not exceed, even including the preservation of the timber, the average cost of the tracks on our principal railroads. Generally, the timber structure, fastenings and workmanship, exclusive of the cost of the iron rails, will be from $2,300 to $4,000 per mile. On this structure, rails of from 40 to 50 lbs. per yard, will be equal in effect to 60 and 70 lbs. rails laid in the usual way. The proprietors of a road, furnishing approved materials in the first instance, the undersigned will construct the track on his plan in the most perfect manner, with recent improvements, for one thousand dollars per mile. And he will farther contract to maintain said track for the period of ten years, furnishing such preserved timber and iron fastenings as may be required, and keeping said track in *perfect adjustment*, under any trade not exceeding 100,000 tons per annum, or its equivalent in passenger transportrtion, for *Two hundred dollars per mile per annum.** To insure the faithful performance of this contract, he will pledge one-fourth of the cost of construction, with the accruing interest thereon, regularly vested, until the completion of the contract. So that a company, by securing payment to the undersigned at the specified period, will have only $750 per mile to pay for the workmanship on the track, without any charge being made for the use of the patent, the subsequent payments, for maintenance of way, and amount withheld, being made from the large margin of profits that will result from its use.

JAMES HERRON.
Civil Engineer and Patentee.
No. 277 South Tenth St., Philadelphia.

* A general average of the repairs done on six of the most successful railroads in this country, for a period of from six to eight years' use has been found to exceed $625 per mile per annum, exclusive of renewal of rails. But few roads in this country carry as much as 100,000 tons per annum. When a road exceeds that quantity, the repairs due to the additional tonnage, up to 200,000 tons, will be charged at one mill per ton; over the latter, and not exceeding 300,000 tons, nine-tenths of a mill, etc. Where there are two tracks to maintain, a large reduction upon those rates will be made. 1y1